SEQ Interim Price Monitoring

QUEENSLAND URBAN UTILITIES

CAPEX OPEX REVIEW

- Rev 2
- Final
- 30 January 2012

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Contents

Document history and status

Revision	Date issued	Reviewed by	Approved by	Date approved	Revision type
Rev 0	18/10/11	S. Hinchliffe	P. Nixon	18/10/11	Working draft
Rev 1	08/11/11	S Hinchliffe	T Saxby	08/11/11	Final
Rev 2	06/12/11	S Hinchliffe	T Saxby	06/12/11	Final

Distribution of copies

Revision	Copy no	Quantity	Issued to
Rev 0	Electronic	N/A	Cath Barker and Keith Hutchinson
Rev 1	Electronic	N/A	Cath Barker and Keith Hutchinson
Rev 2	Electronic	N/A	Cath Barker and Keith Hutchinson

Printed:	30 January 2012
Last saved:	25 January 2012 01:35 PM
File name:	\\skmconsulting.com\BNEProjects\QENV2\Projects\QE09969\Reports\QE09969 SEQ Interim Price Monitoring Report QUU Final Rev 2.docx
Author:	Pat Nixon, Aaron Feast, Maddy Swatman, Stephen Hinchliffe
Project manager:	Stephen Hinchliffe
Name of organisation:	Queensland Competition Authority (QCA)
Name of project:	CAPEX OPEX Review
Name of document:	SEQ Interim Price Monitoring Report 2011/12 QUU
Document version:	Rev 2 Final
Project number:	QE09969

Limitation Statement

The sole purpose of this report and the associated services performed by Sinclair Knight Merz Pty Ltd (SKM) is to assist the Queensland Competition Authority (the Authority) in its price monitoring of the three South East Queensland water and wastewater distribution and retail entities in accordance with the scope of services set out in the contract between SKM and the Authority. That scope of services, as described in this report, was developed with the Authority.

In preparing this report, SKM has relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by the Authority, the water distribution and retail entities and/or from other sources. Except as otherwise stated in the report, SKM has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

SKM derived the data in this report from information sourced from the Authority, the water distribution and retail entities and/or available in the public domain at the time or times outlined in this report. The passage of time, manifestation of latent conditions or impacts of future events may require further examination of the project and subsequent data analysis, and re-evaluation of the data, findings, observations and conclusions expressed in this report. SKM has prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

This report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by SKM for use of any part of this report in any other context.

This report has been prepared within the time restraints imposed by the project program. These time restraints have imposed constraints on SKM's ability to obtain and review information from the entities.

This report has been prepared on behalf of, and for the exclusive use of, the Authority, and is subject to, and issued in accordance with, the provisions of the agreement between SKM and the Authority. SKM accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party.

1. Executive Summary

The Queensland Competition Authority (the Authority) commissioned Sinclair Knight Merz Pty Ltd (SKM) to review the prudency and efficiency of capital expenditure and operating expenditure of the three South East Queensland water (SEQ) and wastewater distribution and retail entities – Allconnex Water, Queensland Urban Utilities, and Unitywater. This review forms part of the Authority's process to undertake interim price monitoring for these monopoly utilities.

We have produced a report for each of the entities. This report pertains to the prudency and efficiency of capital and operating expenditure forecasts of Queensland Urban Utilities servicing Brisbane, Ipswich, Lockyer Valley, Scenic Rim and Somerset (central areas).

In addition, the Authority commissioned us to undertake a review of the water supply and wastewater treatment demand forecasts of the three entities. Our review of the demand forecasts is documented in a separate report to the capital and operating expenditure reports.

1.1. Introduction and background

On 1 July 2010, as a part of water reforms in SEQ, three new water and wastewater distribution and retail businesses commenced operation. These businesses were formed by amalgamating various council-based-and-owned water utilities into three larger water utilities. These entities own the water and sewerage distribution infrastructure and sell water and wastewater disposal services to customers in their respective areas.

This is the second year of price monitoring of the SEQ water distribution entities undertaken by the Authority. The aim of the price monitoring process is to assess the prudency and efficiency of capital expenditure and operating costs, and ultimately the charges to customers within the monopoly distribution and retail businesses, to encourage sustainable water practices within the SEQ water industry.

To aid this process, the Authority appointed SKM to review, on a sample basis, the capital and operating expenditure forecasts and associated information for regulated services over the regulatory period from July 2011 to 30th June 2014. In addition to reviewing capital and operating expenditure forecasts, the Authority has asked us to review the policies and procedures implemented by the entities to develop operating and capital expenditure budgets. Finally the Authority has asked us to review the entities' progress in implementing the Authority supported initiatives identified in its 2010/11 price monitoring final report[1].

[1] Final Report – SEQ Interim price Monitoring for 2010/11 Part A and Part B, QCA March 2011

This interim price monitoring is being carried out against a backdrop of:

- Entities in the second year of an establishment phase
- Much of historic data drawn from information provided by previous service providers (councils)
- Entities implementing newly developed processes and systems for:
  - Capital works evaluation, approval and budgeting
  - Operational expenditure budgeting

In undertaking our assessment of capital and operating expenditure, we have taken cognisance of the demand forecasts produced by the entities and our assessment and recasting of those forecast undertaken on behalf of the Authority.

1.2. Overview of information adequacy

Queensland Urban Utilities has supplied comprehensive supporting information to enable us to complete an assessment of the prudency and efficiency for a sample of operating costs and capital expenditure of selected projects. Supply of adequate information has, in the past, been impacted by the availability of information from Queensland Urban Utilities' participating councils. As time progresses and as Queensland Urban Utilities establishes its own information and communications technology (ICT) services, we expect this limitation of participating council information and information systems to have less impact on Queensland Urban Utilities' ability to provide necessary information for regulatory purposes.

1.3. Policies and procedures

1.3.1. Issues identified in the Authority's 2010/11 report

The Authority's final report on SEQ Price Monitoring for 2010/11 noted a number of issues to be assessed in future reviews in addition to prudency and efficiency of budgeted expenditure. These include: a whole of entity perspective to capital project prudency and efficiency considerations; only commissioned capital expenditure to be included in the regulatory asset base; a standardised approach to cost estimating; a summary document prepared for major capital projects; an implementation strategy and gateway review process for capital projects; and a consistent approach to indexation across SEQ water distribution and retail entities.

Queensland Urban Utilities has adopted a region wide (whole of entity) perspective to capital expenditure where appropriate. The policy for applying capital expenditure to the RAB is consistent with that of the Authority and is consistent across all the entities. There is evidence that Queensland Urban Utilities is establishing processes to ensure a consistent approach to cost estimation for capital projects eg through use of construction unit rates although we are unable to comment on the effectiveness of these systems given the capital project sample selection and that the commencement date of many of these projects predated the formation of Queensland Urban Utilities.

A standard summary documented is prepared for major projects which will both assist with prudent decision making and regulatory reporting. All but one of the projects reviewed had such a document. Documented strategies for major project implementation are being prepared incorporating risk reviews and risk mitigation measures. Similarly, Queensland Urban Utilities has a well document gateway review process for major projects.

Finally, the indexation factor applied by Queensland Urban Utilities is consistent with that applied by the Authority for other recent investigations and that used by Allconnex Water and is considered reasonable and appropriate.

1.3.2. Good industry practice in budget development

Most utilities use two basic forecasting approaches to develop capital expenditure and operating costs budget forecasts for their regulated businesses. The first approach – “base year” forecast – involves extrapolating historical expenditure for a particular expenditure category. It generally requires justification that the base year expenditure is reasonable and efficient. The second approach –“bottom-up” forecast – is developed by forecasting work units or quantities and standard unit rates.

Queensland Urban Utilities uses a bottom up approach for capital project estimation and a combination of bottom up (unit rate based) and historic cost extrapolation for operating budget setting. The method used for operating costs is largely dependent on the geography being considered, principally as a result of custom and practice within the three regions that make up Queensland Urban Utilities and availability of costing tools. We recommend that the well developed tools used in the Brisbane area are applied to areas outside Brisbane to ensure consistency in budgeting processes and accuracy.

1.3.3. Standards of service

Queensland Urban Utilities has developed a single consolidated set of customer service standards applicable to all customers within the service area. We believe that they are well advanced in the

development of their Water NetServ Plan and that it will be completed within the proposed timeframe of 1st July 2013.

The service standards developed are largely comparable to those developed by the two other water distributers in SEQ.

1.3.4. Asset management and condition assessment

Since 1 July 2010 Queensland Urban Utilities has been working to align the operational maintenance approach, methodology and programmes across its service area and there is evidence of significant progress in this respect. The delivery and implementation of the asset management strategy is achieved through the operational maintenance, and capital renewal funding streams, and their associated programmes taking into consideration the standards of service, consequence and likelihood of failure, legislation and expected life.

We consider that Queensland Urban Utilities' asset management practices are appropriate and are in keeping with good industry practice. The adoption of a risk, condition and service standard based assessment to maintenance should lead to optimised operation and maintenance costs across the asset base.

1.3.5. Procurement

Queensland Urban Utilities has produced a comprehensive procurement manual which sets out its procurement policy and procedures covering all aspects of its purchasing process. Although we consider that the outlined policies and procedures represent good industry practice we believe that there could be greater linkage demonstrated between procurement policies and procedures and other operational policies and procedures such as quality approval and control procedures, environmental policies, asset management systems.

1.3.6. Cost allocation

Queensland Urban Utilities allocates cost for capital expenditure based on its assessment of the relevant driver(s). Our review of the information provided, in particular the sample selection, indicates that there are occasional varied and inaccurate determinations of the drivers and consequently cost allocation. Projects responding to instances of sewage overflow appear to be assigned the compliance driver, without considering the cause as opposed to the effect. We have recommended alternate costs drivers, where appropriate, in the body of this report.

We note from our review that recycled water has not been disaggregated into a separate cost category and recommend that Queensland Urban Utilities investigates an appropriate allocation methodology for this service to support the nominated tariffs for recycled water.

From our review of the model used to allocate costs between trade waste and the wastewater via sewer services we consider the overall methodology and assumptions to be sound. We recommend, however that Queensland Urban Utilities uses actual data for cost allocation between treatment processes in place of operator estimates.

1.3.7. Asset Lives

Information on asset lives for major assets, such as reservoirs, treatment and pump stations have been provided in the Authority's templates. We have compared the provided asset lives to available benchmarks and between the three entities. Whilst the assumed asset lives for passive assets such as reservoirs and pipelines is relatively consistent between all entities, there are a number of significant differences between the asset lives for the active assets (e.g. pump stations and treatment plants). This in part is due to the variable nature of such plant in terms or processes and plant used.

We generally consider the asset lives adopted by Queensland Urban Utilities to be reasonable.

1.4. Operating expenditure

Our review of operating expenditure was undertaken in line with the Authority's requirement to assess the prudency and efficiency of operating costs.

For the purposes of reviewing prudency and efficiency of operating costs we have adopted the following definitions:

Operating expenditure is prudent if it addresses one or more of the following drivers:

- Legal obligations
- New growth
- Operation and maintenance of existing infrastructure
- Achievement of an increase in the standard of service that is explicitly endorsed by customers, external agencies or participating councils

Operating expenditure is efficient if the level of expenditure meets one or more of the following assessment criteria:

- In line with conditions prevailing in relevant markets
- Consistent with historical trends in operating expenditure
- Incorporates efficiency gains or economies of scale
- In line with relevant interstate and international benchmarks

The following sample operational expenditure costs and cost forecasts have been reviewed:

- Corporate costs
- Employee expenses
- Electricity costs
- Chemical costs
- Sludge handling costs

Table 1 presents an overview of the prudency and efficiency reviews of Queensland Urban Utilities operating expenditure together with revised operating costs for 2011/12 which take into account changes arising from both our assessment of prudency and efficiency and from our recommended changes in water and wastewater volume growth projections.

- **Table 1 Summary of prudency and efficiency of operating costs ($000s)**

Category	Cost 2011/12	Prudent	Efficient	Revised cost 2011/12
Corporate costs	-	Prudent	Efficient[1]	-
Employee expenses	92,157.2	Prudent	Efficient[1]	92,157.2
Electricity costs	11,746.3	Prudent	Efficient	11,740.5
Chemical costs	4,513.7	Prudent	Efficient	4,529.2
Sludge handling	8,940.9	Prudent	Efficient	8,966.3

1 Assessment of efficiency accounts for the maturity of the business and constraints placed on the business (eg Workforce Framework Agreement).

We have assessed all expenditure within our sample to be prudent.

We have assessed all expenditure within out sample to be prudent, when considering the maturity of the business and constraints placed on the business such as the Workforce Framework Agreement.

In addition to reviewing the sample operating costs, we benchmarked Queensland Urban Utility's aggregate operating costs against other SEQ water distribution and retail entities and peers from around Australia. We conclude from this that Queensland Urban Utility's operating costs for water services are higher than comparable water distributors and retailers in Australia and consistent with the two other water distribution and retail entities in SEQ. However we consider that this is driven largely by costs for bulk water which are higher than those of similar sized water suppliers. Finally, our benchmarking of operating costs associated with waste water services shows that Queensland Urban Utility's operating costs for wastewater services are comparable with those of national peer organisations and lower than those of other SEQ water distribution and retail entities.

1.5. Capital expenditure

Our review of capital expenditure was undertaken in line with the Authority's requirement to assess the prudency and efficiency of capital costs.

Prudency was evaluated against the following drivers:

- Growth – capital expenditure associated with increasing the capacity of assets or construction of new assets, to meet growth in demand or provide additional security of supply, should be included in growth
- Renewal of infrastructure – capital expenditure associated with replacing assets and generally maintaining service levels should be included in renewal of infrastructure
- Improvements – capital expenditure associated with improving service levels and reliability to meet customer and other stakeholder preferences should be included in improvements
- Compliance – capital expenditure associated with meeting price monitoring or legislative obligations should be included in compliance

Efficiency was evaluated by assessing:

- The scope of work, which involved the consideration and inclusion of options identification, investigation and assessment
- The standards of work, which involved the consideration and inclusion of technical, design and construction requirements, industry and other relevant standards
- The market conditions, which involved comparing projected costs with industry benchmarks and with our in-house knowledge of the cost of constructing water and wastewater projects

Our review was undertaken on a project/capital works programme sample basis. The sample selection was discussed and agreed with the Authority to include:

- The single largest project on an expenditure basis
- The eight largest commissioned expenditures in 2011/12
- A small project to be commissioned in 2011/12

The principal objective being to review projects that would be commissioned and enter the regulated asset base (RAB) in 2011/12. Due to conflicts of interest only nine of the 10 selected capital projects were reviewed by us.

Table 2 presents an overview of prudency and efficiency reviews of Queensland Urban Utilities' capital expenditure.

- **Table 2 Summary of prudency and efficiency of capital expenditure projects ($000s)**

Project	Cost 2011/12	Prudent	Efficient
Sewer Trunk System Renewals Program	14,219	Prudent	Efficient
Brisbane Water Reticulation System Renewals Program	7,811	Prudent	Efficient
Auchenflower Branch Sewer Upgrade	5,510	Prudent	Efficient
Toowong Sewers Upgrade	4,982	Prudent	Efficient
Mellor Place Trunk Sewer Upgrade	700	Prudent	Efficient
Canungra Water Reclamation Plant Upgrade	3,345	Prudent	Efficient
Brisbane Wastewater Treatment Flood Recovery	6,674	Prudent	Efficient
Fleet Replacement Program	6,000	Prudent	Efficient
ICT Strategy	9,000	Prudent	Efficient

1.6. Interaction between capital expenditure, operating expenditure and demand forecasting

Many operating costs, such as electricity, chemicals are volume related and hence budget forecasts take into account demand projections for water and wastewater. Similarly, capital project expenditure can be triggered by growth in demand, although this tends to be based on local demand growth (eg in the catchment area of a sewerage treatment plant). Where appropriate, we have taken demand forecasts into account in our review.

1.7. Summary and conclusions

Queensland Urban Utilities has supplied comprehensive supporting information to enable us to complete an assessment of the prudency and efficiency of a sample of operating costs and capital expenditure of selected capital projects.

In all other cases for the sample selection reviewed we conclude that the operating expenditure items are prudent and their costs efficient and the capital projects are prudent and their costs efficient. Our review of the information received regarding cost allocation indicates that there is occasional varied and inaccurate determination of the drivers and consequently cost allocation. The continued used of a 50:50 allocation where two drivers have been identified is not considered appropriate. In line with the Authorities initiatives identified in the 2010/11 price monitoring report, Queensland Urban Utilities has commenced producing a summary document for major projects that will assist with decision making and regulatory reporting.

We conclude from our review of policies and procedures that Queensland Urban Utilities has made significant progress since its inception in putting in place robust systems for capital project planning and budgeting, procurement, asset management and development of consolidated standards of service across its regions.

There is clear evidence of Queensland Urban Utilities adopting a region wide (whole of entity) approach to capital project optimisation and to seeking to achieve efficiency of scale in operating expenditure activities. This whole of entity approach has been demonstrated by, for example, Queensland Urban Utilities' appointment of an independent consultant to assess enterprise wide efficiency improvements and enterprise wide option considerations for capital projects.

2. Introduction

The Queensland Competition Authority (the Authority) is continuing the process of monitoring the prices for water and wastewater services provided by the three water distribution and retail entities within South East Queensland (SEQ):

- Queensland Urban Utilities
- Allconnex Water
- Unitywater (the entities)

The three entities own, operate and maintain the local water and sewerage distribution infrastructure and are responsible for the retail sale of water supply and sewerage services to customers. The purpose of the monitoring is to review the costs and revenues associated with the provision of water and wastewater services by the three entities. The three entities are monopoly providers in neighbouring areas. The aim of the price monitoring process is to ensure efficiency of costs within the monopoly distribution and retail businesses and to ensure sustainable water practices within the SEQ water industry.

To assist this process, the Authority appointed SKM to review the capital and operating expenditure forecasts and expected demand for regulated services over the period from July 2011 – June 2014.

The consultancy consists of three components:

- Component 1 – Assessment of capital expenditure
- Component 2 – Assessment of operating costs
- Component 3 – Assessment of projected demand

Under the terms of our appointment, we are also required to assess:

a) Whether the entities' policies and procedures for capital expenditure represent good industry practice. In particular, the policies and procedures must reflect strategic development plans, integrate risk and asset management planning, support corporate directives, be consistent with external drivers, and incorporate robust procurement practices

b) The deliverability and timing of the capital expenditure program, with regard to the policies and procedures for capital expenditure approvals

c) Whether the capital expenditure forecasts encompass any efficiency gains or economies of scale, and identify a prudent and efficient level of these gains with reference to appropriate benchmarks

d) Whether corporate or overheads costs have been appropriately assigned to capital expenditure projects

In addition, the Authority has asked us to review the entities' progress in implementing the Authority supported initiatives identified in its 2010/11 final interim price monitoring report[2] of:

- A standardised approach to cost estimating, including a standardised approach to estimates for items such as contingency, preliminary and general items, design fees and contractor margins, so that there is a uniformity of cost estimating across all proposed major projects
- A summary document to be prepared for identified major projects so as to facilitate standardised reporting
- An implementation strategy to be developed for each major project that includes recommendation on delivery method, programme and risk review process
- A consistent approach to indexation on capital expenditure across SEQ

We have prepared Component 1 and 2 reports for each of the three retail distribution entities (Queensland Urban Utilities, Allconnex Water and Unitywater). This report addresses our review of the prudency and efficiency of the operating costs and capital expenditure for Queensland Urban Utilities. The final component is addressed in a separate report.[3]

2.1. Terms of reference

We have undertaken the assessment of the prudency and efficiency of operating and capital expenditure based on the terms of reference issued by the Authority. The full terms of reference are included in **Appendix A**. We have set out the key activities contained in the terms of reference in **Table 3** and **Table 4** below, each activity is cross referenced to a section in this report addressing that activity.

Table 3 Terms of Reference - Assessment of Operating Costs

Terms of Reference	Relevant report section
Component 1 – Sample Selection	
Sample Selection	Section 6.5 Sample selection
Component 2 – Reasonableness of Operating Costs from 1 July 2011	
a) assess whether the entities' policies and procedures for operational expenditure represent good industry practice;	Section 5 Policies and Procedures

[2] *Final Report – SEQ Interim price Monitoring for 2010/11 Part A and Part B*, QCA March 2011
[3] *Review of Demand Projections for South East Queensland*, SKM MMA, October 2011

Terms of Reference	Relevant report section
b) assess the scale and cause of variances between forecasts provided in the entity's 2010/11 and 2011/12 returns;	Section 6.2 Historical costs and variances
c) assess the operating costs in aggregate, and for the sample of major operating expenditures that comprise a significant portion of retail and distribution operating costs identified in component 1	Section 6.4 Costs in aggregate
d) accept the operational constraints imposed by the SEQ Urban Water Arrangements Reform Workforce Framework 2010, and identify the related costs in doing so compared to more competitive arrangements;	Section 6.7 Employee expenses
e) liaise with the Authority's consultants appointed for the review of demand and capital expenditure to ensure that consistent advice is provided to the Authority.	Section 8 Synergies between capital expenditure, operating expenditure and demand forecasting
f) identify the value of an expenditure considered not to be reasonable;	Section 9 Proposed revised templates
g) provide a revised set of information templates to the Authority that contain only reasonable operating costs with all adjustments to the entities' submissions clearly indicated (focussing on Schedule 5.11.1 (operating costs).	Section 9 Proposed revised templates
Component 3 – Cost Allocation	
a) assess the methods adopted by the entities to allocate operating costs between services, against relevant benchmarks. This will involve as assessment of cost drivers, the approaches adopted by each entity, and approaches approved by economic regulators in other jurisdictions;	Section 5.6 Cost allocation
b) report on the entities' progress in achieving the systems and information needed for informed pricing and reporting; and whether the information systems being put in place by the entities allow for a highly disaggregated and appropriately allocated system of cost recording.	Section 4 Overview of Information Adequacy

Table 4 Terms of Reference - Assessment of Capital Expenditure

Terms of Reference	Relevant report section
Component 1 – Sample Selection	
Sample Selection	Section 7.5 Sample selection
Component 2 – Prudency and Efficiency of Capital Expenditure for 1 July 2011	
a) assess whether the entities' policies and procedures for capital expenditure represent good industry practice. In particular, the policies and procedures must reflect strategic development plans, integrate risk and asset management planning, corporate directives, be consistent with external drivers, and incorporate robust procurement practices;	Section 5 Policies and Procedures
b) assess entities' progress in addressing the issues identified in the Authority's 2010/11 report	Section 5.1 Issues identified in the Authority's 2010/11 report
c) assess whether the representative sample of capital expenditure projects is prudent and efficient.	Section 7 Prudency and Efficiency for each project assessed

Terms of Reference	Relevant report section
d) assess the deliverability and timing of capital expenditure program, and chart the capex historically delivered by participating councils from 1 July 2008 to 30 June 2010; the entities' forecasts made in 2010/11 of the period 1 July 2010 to 30 June 2013; and entities'' current forecasts to 30 June 2014. Assess the scale and cause of variances between forecasts provided in the entities' 2010/11 and 201/12 returns;	Section 7.3 Historical Delivery Section 7 Timing and Deliverability for each project assessed
e) liaise with the Authority's consultants appointed for the review of demand and operating expenditure to ensure that consistent advice is provided to the Authority.	Section 8 Synergies between capital expenditure, operating expenditure and demand forecasting
f) take into account any previous reviews of relevant assets provided by the entities, such as Priority Infrastructure Plans;	Section 7 Capital Expenditure
g) identify whether the capital expenditure forecasts encompass any efficiency gains or economies of scale, and identify a prudent and efficient level of these gains with reference to appropriate benchmarks;	Section 7 Efficiency Gains for each project assessed
h) identify the value of any expenditure considered not to be prudent or efficient;	Section 9 Proposed revised templates
i) assess the regulatory asset lives for capital expenditure in 5.8.1.1, and the tax asset lives for capital expenditure in 5.8.1.2, against relevant benchmarks;	Section 6.7 Asset Lives
j) provide a revised set of information templates to the Authority that contain only the prudent and efficient capital expenditure and useful asset lives, with all adjustments to the entities' submission clearly indicated in the relevant worksheets and also separately logged (focusing on Schedules 5.6.1 & 5.6.2 (Capital Expenditure) and 5.8.1.1 (Asset Lives (RAB)).	Section 9 Proposed revised templates
Component 3 – Cost Allocation	
a) assess the methods adopted by the entities to allocate existing and future capital costs between services, against relevant benchmarks. This will involve as assessment of cost drivers, the approaches adopted by each entity, and approaches approved by economic regulators in other jurisdictions;	Section 5.6 Cost allocation
b) report on the entities' progress in achieving the systems and information needed for informed pricing and reporting; and whether the information systems being put in place by the entities allow for a highly disaggregated system of cost recording.	Section 4 Overview of Information Adequacy

2.2. Prudency and efficiency

For the purposes of this consultancy, we have adopted the following definitions prudency and efficiency as discussed and agreed with the Authority:

- ***Operating expenditure*** is ***prudent*** if it is required as a result of a legal obligation, new growth, operation and maintenance of existing infrastructure, or it achieves an increase in the reliability or quality of supply that is explicitly endorsed or required by customers, external agencies or participating councils.
- ***Operating expenditure*** is ***efficient*** if it is undertaken in a least-cost manner over the life of the relevant assets and is consistent with relevant benchmarks, having regard to the conditions

prevailing in relevant markets, historical trends in operating expenditure and the potential for efficiency gains or economies of scale

We have adopted the following definitions of prudency and efficiency of capital expenditure generally as set out by the Authority its terms of reference:

- ***Capital expenditure*** is ***prudent*** if it is required as a result of a legal obligation, growth in demand, renewal of existing infrastructure that is currently used and useful, or it achieves an increase in the reliability or the quality of supply that is explicitly endorsed or desired by customers, external agencies or participating councils
- ***Capital expenditure*** is ***efficient*** if:
  i. The scope of the works (which reflects the general characteristics of the capital item) is the best means of achieving the desired outcomes after having regard to the options available, including more cost effective regional solutions having regard to a regional (whole of entity) perspective, the substitution possibilities between capital expenditure and operating expenditure and non-network alternatives, such as demand management
  ii. The standard of the works conforms to technical, design and construction requirements in legislation, industry and other standards, codes and manuals. Compatibility with existing and adjacent infrastructure is relevant as is consideration of modern engineering equivalents and technologies.
  iii. The cost of the defined scope and standard of works is consistent with conditions prevailing in the markets for engineering, equipment supply and construction

2.3. Scope exclusions

The following items are outside of the scope of our review:

- Discussion of the allowable operation costs (including the Queensland Water Commission and the Authority's charges, finance charges, treatment of depreciation, working capital, asset valuation methodology)
- Discussion of the application of the standard building block method for calculating Maximum Allowable Revenue
- Review of capital costs before 2011/12 and after 2013/14 associated with projects that have been reviewed
- Review of other parts of a project, of which a specific part is being reviewed as part of the commission, eg the review of a supply contract when we are reviewing the installation contracts of these supplied goods
- Development of detailed budget cost estimates for the capital projects under review

2.4. Report overview

This report is structured as follows:

- Background
- Overview of information adequacy
- Policy and procedure review
- Prudency and efficiency of operating expenditure
- Prudency and efficiency of capital expenditure
- Interactions between capital expenditure, operating expenditure and demand forecasting
- Proposed revised templates
- Conclusions and recommendations

2.5. Application of assessment

Our assessment of prudency and efficiency of capital expenditure applies to Queensland Urban Utilities' proposed expenditure from 1 July 2011 to 30 June 2014 and our assessment of prudency and efficiency of proposed operational costs forecasts from 1 July 2011. The underlying information used to make this determination may only be relevant to the particular circumstances and activities that will be undertaken in 2011/12. Hence, the acceptance of expenditure as being prudent and efficient in this assessment should not be used a precedent for regulatory assessments to the future. This applies to both recurring operating expenditure and capital projects where capital expenditure will be spread over a number of years.

3. Background

3.1. Entities

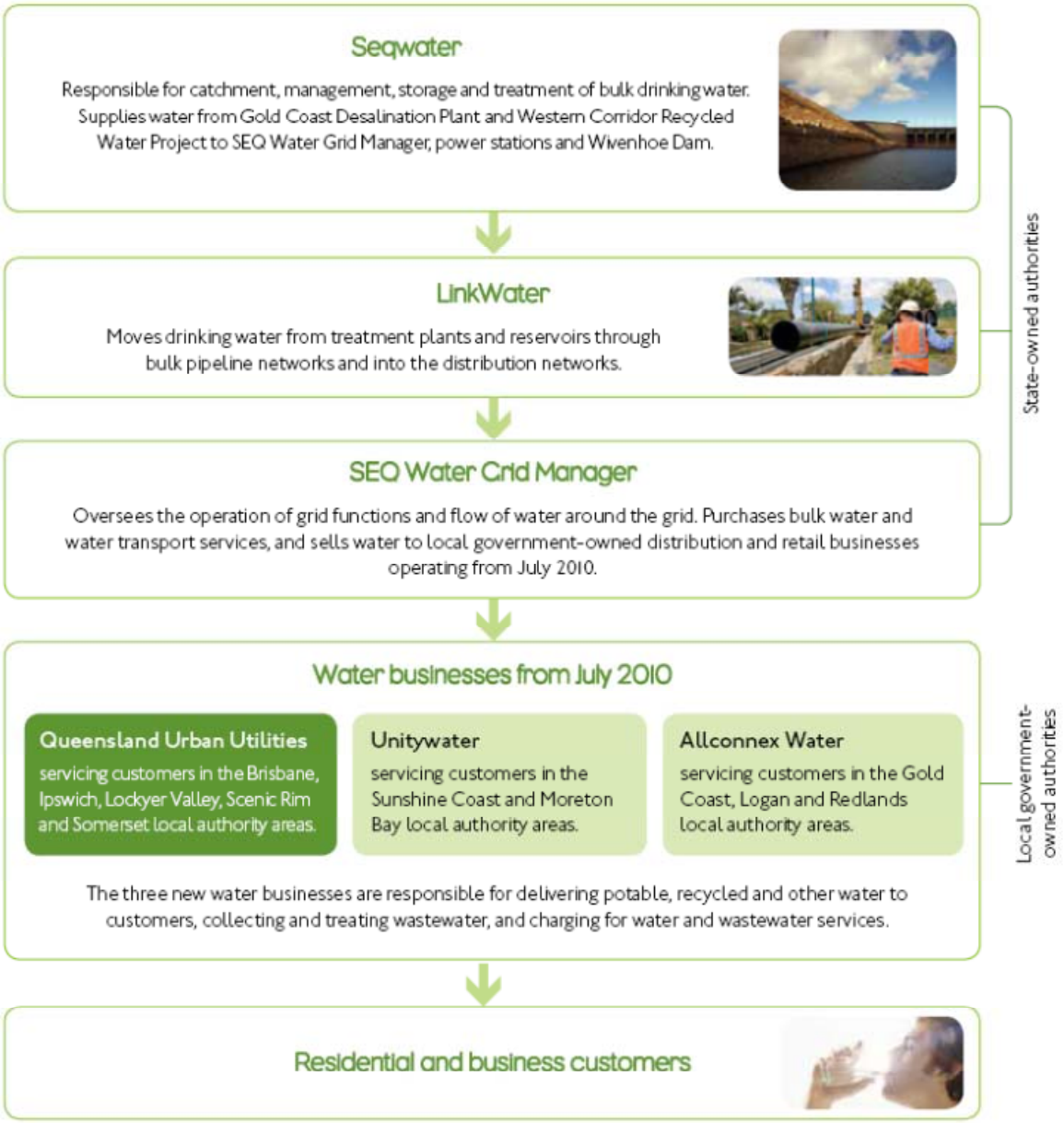
On 1 July 2010, the Queensland Government implemented a series of reforms in the SEQ water industry. The result of this was the formation of three new distribution and retail entities. These entities were formed by amalgamating various councils based and owned water utilities into three larger water entities. The entities now own the water and sewerage distribution infrastructure and sell water and sewage disposal services to customers in their respective areas. The three distribution and retail entities are:

- Queensland Urban Utilities – servicing the Brisbane, Scenic Rim, Ipswich, Somerset and Lockyer Valley areas
- Unitywater – servicing the Sunshine Coast and Moreton Bay areas
- Allconnex Water – servicing the Gold Coast, Logan and Redland areas

In addition to the retail distribution entities, four new bulk water entities that own and operate the SEQ Water Grid were established.

This interim price monitoring is being carried out against a backdrop of:

- Entities in the second year of an establishment phase
- Much of historic data drawn from information provided by previous service providers (councils)
- Entities implementing newly developed processes and systems for:
  - Capital works evaluation, approval and budgeting
  - Operational expenditure budgeting



Source: *Queensland Urban Utilities Information Return 2011/12* (Queensland Urban Utilities, 2011)

- **Figure 1 Contractual and operational characteristics of the water grid**

3.2. The role of the Authority

The Authority is an independent Statutory Authority established by the Queensland Competition Authority Act 1997 and is given the task of regulating prices, access and other matters relating to regulated industries in Queensland.

Under the Queensland Competition Authority Act, the Authority's roles in relation to the water industry are to:

- Investigate and report on the pricing practices of certain declared monopoly or near monopoly business activities of State and local governments
- Receive, investigate and report on competitive neutrality complaints
- Mediate and/or arbitrate access disputes and water supply disputes
- Investigate and report on matters relevant to the implementation of competition policy

In July 2010 the Premier and the Treasurer referred the monopoly distribution and retail water and wastewater activities of Queensland Urban Utilities, Allconnex Water, and Unitywater to the Authority for a price monitoring investigation. The Authority's price monitoring role has been set out in the Authority's *Final Report, SEQ Interim Price Monitoring Framework,* dated April 2010. The role requires the Authority to monitor and report on prices and revenues. This is the second year of price monitoring of the entities.

From 1 July 2010 until the recent enactment of the Fairer Water Prices for SEQ Amendment Act 2011 (FWP Act) the QCA's role was to shift from one of price monitoring to one of price determination from 1 July 2013. The FWP Act removed the price determination role of the QCA that was to apply from 1 July 2013 by amending the QCA Act. This removal of the price determination role gives Participating Councils responsibility and accountability for the water and sewerage services within their individual boundaries.

In addition to this amendment the FWP Act amended the South East Queensland Water (Distribution and Retail Restructuring) Act 2009 (DRR Act) to provide for:

- annual increases in tariffs for water and wastewater for the next two years being capped at inflation, as measured by the consumer price index for Brisbane
- the requirement that Participating Councils prepare and adopt a price mitigation plan

In conjunction with these legislative changes the State Government gazetted a change to the required date for submission of the QCA data template and information return from 1 July 2011 to 31 August 2011.

3.3. Role of the SEQ Water Grid Manager

The SEQ Water Grid Manager is responsible for directing the physical operation of the SEQ Water Grid to ensure regional water supply security and efficiency objectives are met. By acting as the single buyer of bulk water services and the single seller of bulk water for urban purposes, the SEQ Water Grid Manager provides a mechanism to share the costs of the SEQ Water Grid. It sells a

wholesale “pool” product, which reflects the portfolio cost of supplying retailers with a defined security and quality of supply at a defined bulk supply node.

The SEQ Water Grid Manager sells potable water to the three water distribution and retail entities of Allconnex Water, Queensland Urban Utilities and Unitywater and various industrial and rural customers at a price determined under the SEQ Bulk Water Price Path. A 10-year price path has been projected for bulk water prices. The Bulk Water Price Path is intended to reach full cost recovery by 2017/18. The bulk water costs make up a significant proportion of the water distribution and retail entities’ operating costs.

4. Overview of Information Adequacy

4.1. Summary of information received

Queensland Urban Utilities has provided information on its capital expenditure program and operating expenditure budget forecast within its submission to the Authority in response to the Authority's Information Request, including:

- A completed Information Requirement Template (2011/12 Information Template)
- Supporting documentation, including a written submission, *Queensland Urban Utilities Information Return 2011/12* (Queensland Urban Utilities, 2011) (2011/12 Information Return) and other documents.
  (Collectively: 2011/12 Information Submission)

A full list of information presented for each operational projects assessed is presented in Section 7 and for each capital expenditure projects assessed is presented in Section 8.

4.2. Operational expenditure

The information requirements are set out in the Authority's information requirement documentation[4]. This has been reproduced below:

The entity must provide details, allocated between the deemed categories (activity, geographic area, core service) of:

a) Actual operating costs for the year ending 30 June 2009 and for the year ending 30 June 2010

b) Forecast operating expenditure from July 2010 to 30 June 2014

According to:

- *Bulk water costs*
- *Employee expenses*
- *Contractor expenses*
- *GSL payments*
- *Electricity charges*
- *Sludge handling costs*
- *Chemical costs*
- *Other material and services*

[4] SEQ Interim Price Monitoring Information Requirements for 2011/12 (QCA, July 2011)

- *License and regulatory fees*
- *Non-recurrent costs*
- *Corporate costs*
- *Indirect taxes*

Entities are also required to provide details of third party transactions and related party transactions (name of party, description of services, value of payment, description how the value of payment was determined) together with a description of how the payment is reflected in the information returns.

We note the following points with respect to the adequacy of data provided:

- Corporate costs have not been disaggregated. Instead, corporate costs are captured under the employee costs and other materials and services categories. From our interviews, Queensland Urban Utilities has advised that disaggregation of corporate costs is not readily achievable due to a limitation of their financial software
- Details of third party transactions are included in the information return
- Details of related party transactions are included in the information return

4.3. Capital expenditure

Overall the provision of information is acceptable. The Queensland Urban Utilities submission did not utilise the information requirements template produced by the Authority for reporting capital expenditure by project. Instead Queensland Urban Utilities provided a detailed commissioning model as in the previous year's submission.

The review of the sample projects focused on projects that were to be commissioned in 2011/12, and therefore to be entered into the regulatory asset base (RAB) in 2011/12. Many infrastructure projects, particularly those of significant capital expenditure and therefore were likely to be reviewed, have a multiyear period from initiation to commissioning. Given the recent restructuring of Brisbane Water, Ipswich Water, and the water and wastewater sections of Somerset, Lockyer Valley and Scenic Rim Regional Councils into Queensland Urban Utilities, many of the projects reviewed were initiated by their participating entities. Consequently the procedures used and documentation produced were variable and do not represent current Queensland Urban Utilities procedures.

The retrospective development of documentation for projects which utilise inadequate procedure, as assessed against current requirements, will be of limited value other than to provide an acceptable paper trail for the discussion regarding inclusion into the RAB.

Notwithstanding this a minimum acceptable level of documentation is required for regulatory purposes.

The structure of the 2011/12 Submission document was appropriate and the interviews with Queensland Urban Utilities staff were generally conducive to progressing the review in the timeframe allowed.

4.4. Information systems and process

The Information and Communication Technology (ICT) services at present are delivered by Brisbane City Council (BCC) through a service level agreement (SLA). Brisbane City Council has advised Queensland Urban Utilities that they will not extend the term of the SLA consequently Queensland Urban Utilities has developed a project to implement a rolling three year ICT investment program.

At present information regarding assets and projects are stored in multiple locations, recorded using multiple information systems, with some aspects recorded on paper only. In addition there are certain historical asset data which are not recorded with the information being retained by the operating personnel and there are discrepancies between the information recorded within the different information systems and locations.

Consequently while we understand that the existing systems and processes have a minimum and acceptable functionality, they are constraining efficient management and operation and warrant a comprehensive overhaul. In recognition of this, Queensland Urban Utilities has implemented an ICT strategy project with the objective of establishing systems required for the efficient operation of its business.

The ICT strategy project contains an enterprise resource program (ERP) component that will be developed and implemented within a three year period. We consider the development and implementation of the ERP to have the potential functionality to accurately record the cost associated with each capital project and the operational expenses of each asset. The architecture of the ERP will determine the level of cost breakdown for each capital project and operational cost associated to an asset.

The ICT strategy and the ERP development and implementation is intended to ensure accurate information is available to assist in managing capital expenditure and operation expenditure by project and asset.

The current processes being implemented by Queensland Urban Utilities are considered appropriate and will support prudent decision making and efficient implementation as well as

reporting. As expected these processes are being refined as Queensland Urban Utilities establishes itself as a mature business given its recent creation.

4.5. Obstacles to reporting

Queensland Urban Utilities identified several limitations in its submission that prevent it from processing information to an acceptable regulatory standard. These issues are primarily based upon immature organisational systems and inadequate records of inherited assets. Key limitations identified include:

- Varying level of advice received from local governments for input into developing the population forecasts
- Lack of aligning operational maintenance approaches, methodologies and programmes across service area
- Lack of established management systems and information systems

4.6. Conclusions

Queensland Urban Utilities has supplied comprehensive supporting information to enable us to complete an assessment of the prudency and efficiency for a sample of operating costs and capital expenditure of selected projects. Supply of adequate information has, in the past, been impacted by the availability of information from Queensland Urban Utilities' participating councils. As time progresses and as Queensland Urban Utilities establishes its own ICT services, we expect this limitation of participating council information and information systems to have less impact on Queensland Urban Utilities' ability to provide necessary information for regulatory purposes.

5. Policies and Procedures

5.1. Issues identified in the Authority's 2010/11 report

The Authority's final report on SEQ price monitoring for 2010/11[5] noted a number of issues to be assessed in future reviews. These were:

a) Consideration of prudency and efficiency of capital expenditure from a regional (whole of entity) perspective
b) Only commissioned capital expenditure to be included in the regulatory asset base and therefore prices
c) A standardised approach to cost estimating, including a standardised approach to estimates for items such as contingency, preliminary and general items, design fees and contractor margins, so that there is uniformity of cost estimating across all proposed major projects
d) A summary document to be prepared for identified major projects so as to facilitate standardised reporting
e) An implementation strategy to be developed for each major project that includes recommendation on delivery methodology, program and a risk review process
f) A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects
g) Pricing to be demonstrably based on costs and other relevant factors
h) A consistent approach to indexation of capital expenditure across SEQ

The assessment of how Queensland Urban Utilities has addressed the issues a) to f) and h) identified by the Authority are discussed in brief in this section. Detailed comments on the issues identified are also given on a project by project basis in subsequent sections.

5.1.1. Whole of entity perspective to capital expenditure

Queensland Urban Utilities uses an iterative process based on risk management and prioritisation to determine an annual capital expenditure program that can be afforded and sustained by the entity.

Overall there is a significant component associated with growth, as a consequence of Queensland Urban Utilities servicing growth areas, particularly in the western region, and also due to general urban renewal and densification.

The overall capital expenditure for the 2011/12 and 2012/13 financial years is comparable to the capital expenditure of others Australian water and wastewater entities. The development phase

[5] *Final Report – SEQ Interim price Monitoring for 2010/11 Part A and Part B,* QCA March 2011

from the creation of Queensland Urban Utilities is requiring the expenditure of some establishment costs. These are regarded as appropriate and reasonable.

There is clear evidence from our review that Queensland Urban Utilities is taking a whole of entity perspective to its identification, option evaluation and selection of capital projects. This is particularly evidenced by Queensland Urban Utilities' appointment of an independent consultant Third Horizon to assess entity wide efficiency improvements. We are also aware that in developing the sewage treatment plant projects of Goodna and Wacol, Queensland Urban Utilities evaluated catchment loading and options for addressing such on an enterprise wide basis.

5.1.2. Commissioned capital expenditure

In relation to capital expenditure to be included in the RAB, within its 2011/12 Information Return Queensland Urban Utilities states:

> *"Queensland Urban Utilities' capital expenditure is applied to the RAB on an 'as-commissioned' basis as required by the QCA's directive. To forecast capital expenditure on this basis, 'as-incurred' estimates of capital expenditure are first produced."*

We conclude that this approach is consistent with the requirement set out by the Authority.

A standardised approach has been adopted by all of the entities, that is, an asset is only added to the RAB when it begins contributing to the regulated service delivery for which it is constructed and commissioned.

5.1.3. Consistent approach to cost estimation

The approaches to cost estimation used by Queensland Urban Utilities vary with the type of project.

Recurrent projects utilise tendered unit rates that have been submitted for recent previous projects with allowance for price escalation.

For capital projects for specific infrastructure Queensland Urban Utilities utilise a bottom up approach to quantity estimation and apply rates to these quantities. The detail of the quantity estimation varies with the stage of the design, increasing as the design and investigation become more detailed.

The rates are determined using recently received unit rates from other similar projects. Dependant on the type and scale of the project, at the more advanced project stages, sometimes consultants are commissioned to investigate, analyse and assess the project. This generally results in the

development of a bottom up cost estimate, which is able to be compared to the previously determined internal high level estimate.

Generally, the external consultants used by Queensland Urban Utilities have produced acceptable cost estimates, however there are some instances where grossly inadequate estimates have been produced, possibly a result of utilising consultants that do not have adequate specific experience and recent experience in specialist fields.

From the documentation reviewed, there is evidence that Queensland Urban Utilities is establishing processes and procedures with a view to ensuring a consistent approach to capital project cost estimating across the business. However, our review of the effectiveness of these processes has been limited as a result of the sample of capital projects selected. This is due to some of the projects being initiated by participating councils prior to the creation of Queensland Urban Utilities.

An overview of the elements of cost estimating process used for the capital project sample selected is provided in **Table 5** to **Table 9** below.

- **Table 5 Cost estimating – capital items costs**

Project	Pricing
Auchenflower Branch Sewer Upgrade	The contract pricing was determined during the tendering process
Brisbane Toowong Sewer Upgrade	No information provided
Brisbane Water Reticulation System Renewals Program	Price estimates based on contractor unit rates for estimation. Actual pricing determined during the tendering process
Brisbane Wastewater Treatment Flood Recovery	Pricing was demonstrated to be based on costs for Oxley Water Reclamation Plant, it was not for Karana Downs Water Reclamation Plant and Fairfield Water Reclamation Plant
Fleet Replacement Program	Pricing based on estimates of the suppliers rates
ICT Strategy Project	No information provided
Mellor Place Trunk Sewer Upgrade Project	Price estimates based on contractor unit rates for estimation. Actual pricing to be determined during the tendering process
Canungra Water Reclamation Plant Upgrade	The contract pricing was determined during the tendering process
Sewer Trunk System Renewals Program	Price estimates based on contractor unit rates for estimation. Actual pricing determined during the tendering process

In the projects reviewed there is no standard approach to cost estimation of capital items.

Table 6 Cost estimating – preliminary and general items

Project	Preliminary and general items
Auchenflower Branch Sewer Upgrade	Consultant engaged to develop a cost estimate, included in Feasibility study
Brisbane Toowong Sewer Upgrade	Included in the Post Market Submission
Brisbane Water Reticulation System Renewals Program	Included in Business Case for Rolling Program
Brisbane Wastewater Treatment Flood Recovery	Emergency situation - no information provided
Fleet Replacement Program	Not applicable
ICT Strategy Project	No information provided
Mellor Place Trunk Sewer Upgrade Project	Included in Feasibility Scoping Document
Canungra Water Reclamation Plant Upgrade	Costs provided in tender and evaluated
Sewer Trunk System Renewals Program	Business Case for Trunk Sewer Rolling Program

In the projects assessed there is no consistent approach to cost estimation for preliminary and general items.

Table 7 Cost estimating – contractor margins

Project	Contractor Margins
Auchenflower Branch Sewer Upgrade	No information provided
Brisbane Toowong Sewer Upgrade	No information provided
Brisbane Water Reticulation System Renewals Program	No information provided
Brisbane Wastewater Treatment Flood Recovery	No information provided
Fleet Replacement Program	No information provided
ICT Strategy Project	No information provided
Mellor Place Trunk Sewer Upgrade Project	No information provided
Canungra Water Reclamation Plant Upgrade	No information provided
Sewer Trunk System Renewals Program	No information provided

- **Table 8 Cost estimating – design fees**

Project	Design Fees
Auchenflower Branch Sewer Upgrade	6.1% (Consultant engaged to develop a cost estimate, included in Feasibility study)
Brisbane Toowong Sewer Upgrade	No information provided
Brisbane Water Reticulation System Renewals Program	No information provided
Brisbane Wastewater Treatment Flood Recovery	Emergency – no design involved
Fleet Replacement Program	Not applicable
ICT Strategy Project	No information
Mellor Place Trunk Sewer Upgrade Project	Included in 25% allowed for Indirect Costs (planning, design, survey, geotech, supervision etc) in preliminary cost estimate
Canungra Water Reclamation Plant Upgrade	Costs provided in tender – 6%
Sewer Trunk System Renewals Program	No information provided

In the projects assesses, no standardised approach to the calculation of design fees is identifiable from the supporting documentation.

- **Table 9 Cost estimating - contingency**

Project	Contingency
Auchenflower Branch Sewer Upgrade	4.3% of project total, 10% of contract
Brisbane Toowong Sewer Upgrade	Contract contingency of 10% (15% allowable) in addition to project contingency of 20%
Brisbane Water Reticulation System Renewals Program	No information provided
Brisbane Wastewater Treatment Flood Recovery	10% for a majority of the tenders
Fleet Replacement Program	No information provided
ICT Strategy Project	No standard approach to cost exists for this type of project
Mellor Place Trunk Sewer Upgrade Project	10% included in preliminary cost estimate
Canungra Water Reclamation Plant Upgrade	No information provided
Sewer Trunk System Renewals Program	No information provided

In the projects assessed, there is no consistent level of contingency applied. No contingency has been provided for in the Brisbane Toowong Sewer Upgrade, Brisbane Water Reticulation System Renewals Program, Fleet Replacement Program and Sewer Trunk System Renewals Program. No information has been provided as to whether contingency is included in the contracts within the programs (ie within the construction contracts for the renewals programs).

Thus whilst Queensland Urban Utilities is establishing processes to facilitate a consistent approach to cost estimation, the implementation of these processes has not been evident in the sample of capital projects reviewed. This may in part be explained by the timing as to when these projects were initiated, ie in many cases before the establishment of Queensland Urban Utilities.

5.1.4. Major projects summary document

Major projects are defined as those having expenditure for the entire project of > $5 M. Queensland Urban Utilities has developed a standardised summary document for these projects. This document has an appropriate structure and relevant 'fields' to communicate the necessary information to facilitate prudent decision making.

The completion of this document for the sample projects reviewed is listed in **Table 10** below.

- **Table 10 Review of documentation completed for projects reviewed**

Project	Value in review period ($M)	Major project	Standard report
ICT Strategy	43.0	Yes	Yes
Sewer Trunk System Renewals Program	36.0	Yes	Yes
Brisbane Water Reticulation System Renewals Program	29.0	Yes	Yes
Fleet Replacement Program	15.0	Yes	Yes
Brisbane Wastewater Treatment Flood Recovery	6.7	Yes	Yes
Auchenflower Branch Sewer Upgrade	5.5	Yes	Yes
Toowong Sewers Upgrade	5.0	Yes	Yes
Canungra Water Reclamation Plant Upgrade	3.3	No	Yes
Mellor Place Trunk Sewer Upgrade	1.2	No	Yes

The above information illustrates that the procedure for developing a standardised summary document has consistently been implemented for major projects reviewed..

It is expected that the implementation of a summary document will be mandatory for all major project, regardless of initiating entity from now on. All legacy major projects should either be completed, reviewed since the establishment of Queensland Urban Utilities and therefore adhering to current Queensland Urban Utilities procedures or of such significance ie wastewater treatment plant augmentations that a summary document is required as a part of good risk management and governance procedures.

5.1.5. Major project implementation strategy

From review of information provided in the Queensland Urban Utilities information return 2011/12 and supporting documentation for the review of sample projects it is evident that Queensland

Urban Utilities does not have a consistent, independent implementation strategy which is applied to all major projects.

The majority of projects have documentation recommending delivery methodology, program and a risk review process. These are provided in different documents for different projects, ie for the Auchenflower Branch Sewer Upgrade project a 'Project Management Plan' has been provided whereas for the Toowong Sewers Upgrade project the 'Feasibility Report' and the 'Post-Market Submission' has been provided, for both projects the documentation covers the implementation strategy.

Our review of the effectiveness of the implementation strategy has been limited as a result of the sample of capital projects selected. This is due to some of the projects being initiated by participating councils prior to the creation of Queensland Urban Utilities, with these project utilising the process and procedures of these participating councils.

The completion of this document for the sample projects reviewed is listed in **Table 11** below.

- **Table 11 Review of documentation completed for projects reviewed**

Project	Value in review period ($M)	Implementation strategy
ICT Strategy	43.0	Yes
Sewer Trunk System Renewals Program	36.0	Partial
Brisbane Water Reticulation System Renewals Program	29.0	Yes
Fleet Replacement Program	15.0	Partial
Brisbane Wastewater Treatment Flood Recovery	6.7	Yes
Auchenflower Branch Sewer Upgrade	5.5	Yes
Toowong Sewers Upgrade	5.0	Yes
Canungra Water Reclamation Plant Upgrade	3.3	No
Mellor Place Trunk Sewer Upgrade	1.2	No

Notwithstanding the above, from the documentation reviewed and interviews completed, there is evidence that Queensland Urban Utilities is establishing processes and procedures with a view to ensuring a consistent approach to the implementation strategy documentation.

5.1.6. Gateway reviews

Queensland Urban Utilities has in place a gateway review process for major projects to ensure that efficiencies in the delivery of the capital programme are achieved. According to Queensland Urban Utilities the gateway review programme provides independent support to projects by having peers examine them at critical moments in their lifecycle.

Within its return Queensland Urban Utilities states:

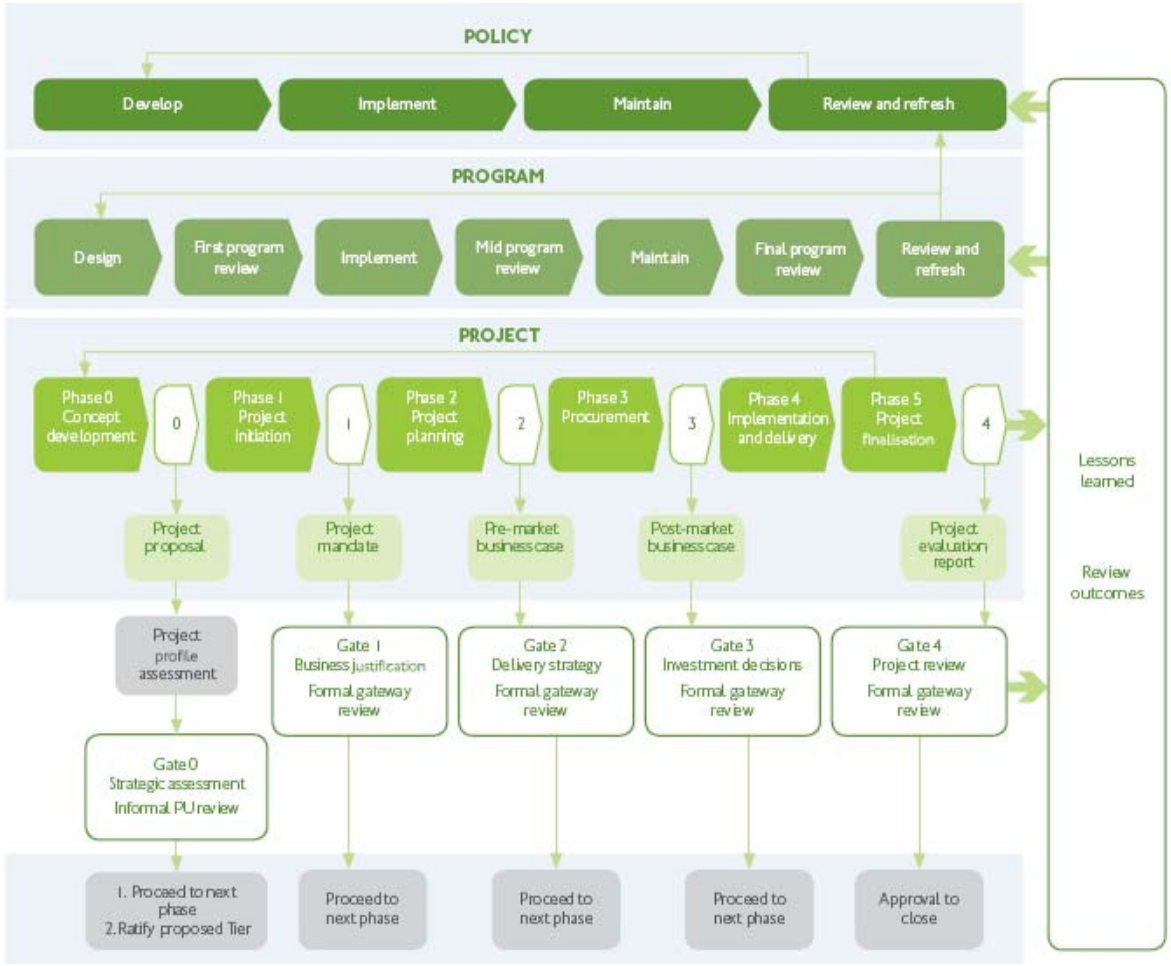
> *"The Gateway Review Programme is applied at the policy, programme and project levels. At the project level, this involves a series of 'gates' through which a project must pass. The Gateway Review Programme is designed to ensure that a project (through its supporting documentation) has been considered against each 'gate' relevant to the project lifecycle. The initial gateway review stage addresses a project's justification and considers the strength of its business case."*

According to Queensland Urban Utilities; the Gateway Review Programme helps to achieve business aims and supports project owners by helping them to ensure that:

- The best available skills and experience are used on the project
- All stakeholders completely understand the project status and issues involved
- They achieve realistic time and cost targets for the project
- They provide guidance and advice to project teams from independent fellow practitioners
- Assurance is provided that effective project governance and project management arrangements are in place
- Effective risk management practices are being used
- Project objectives are aligned to the strategic deliverables
- Skills and knowledge are improved across the organisation through staff participation in reviews
- The lessons learned are effectively captured and used to improve the success of other projects

The Gateway Review Programme is an important tool for Queensland Urban Utilities to ensure that its projects are delivered in a timely and cost-effective manner.

From the information we have reviewed and from discussions we have held with Queensland Urban Utilities we consider that the implementation and use of a gateway process is robust and consistent with the requirements set out by the Authority.



Source: *Figure 7-1, Price Monitoring Information Return* (Queensland Urban Utilities, 2011)

- **Figure 2 Queensland Urban Utilities' gateway review process**

5.1.7. Indexation

Queensland Urban Utilities has adopted the mid-point of the target inflation rate as the indexation rate for the price monitoring period, 2.5 percent. Queensland Urban Utilities states that:

> *"For the price monitoring period, the indexation rate used is consistent with the implied inflation in the benchmark WACC. The QCA has in recent investigations (e.g. Gladstone Area Water Board (GAWB), Queensland Rail Network and Grid Service Providers) applied a 2.5% indexation factor on the basis that this represents the mid-point of the Reserve Bank of Australia's (RBA's) target inflation band and that there is a reasonable expectation that the RBA will be able to maintain inflation within this band over time."*

This is consistent with the indexation factor applied by the Authority for other recent investigations and that used by Allconnex Water. A comparison of indexation factors applied by the entities for

capital expenditure is outlined below in **Table 12** and those applied for operational expenditure are provided in **Table 13**.

- **Table 12 Comparison of indexation (%) for capital expenditure**

Entity	Cost index (%)		
	2011/12	2012/13	2013/14
Queensland Urban Utilities [a]	2.5	2.5	2.5
Allconnex Water [a]	2.7	2.5	2.5
Unitywater [b]	3.07	3.07	3.07

Note: [a] Mid-point of Reserve Bank of Australia target inflation band; [b] determined by the difference between the RBA return on the market rate for five year bonds and five-year capital indexed bonds

- **Table 13 Comparison of indexation (%) for operational expenditure**

Cost index		Expense group					
Entity	Year	Labour (direct & indirect)	Electricity	Chemicals	Sludge handling	Other costs	Non-revenue water
Queensland Urban Utilities	2011/12[a]	4.5	5.8	4.0	4.0	2.5	As per bulk water price path
	2012/13	4.25	6.2	2.75	2.75	3.0	
	2013/14	3.7	6.2	3.0	3.0	2.5	
Allconnex Water	2011/12	4.0[b]	6.6[c]	2.7[e]	NA	2.7[e]	NA
	2012/13	4.0[b]	10.4[d]	2.5[e]	NA	2.5[e]	NA
	2013/14	4.0[b]	10.4[d]	2.5[e]	NA	2.5[e]	NA
Unitywater	2011/12	NA	NA	NA	NA	NA	NA
	2012/13	4.0[f]	6.54[g]	3.0[h]	3.0[h]	3.0[h]	3.0[h]
	2013/14	4.0[f]	6.54[g]	3.07[h]	3.07[h]	3.07[h]	3.07[h]

Note: [a] budget year; [b] based on Allconnex Water's 2010-11 staff costs, small changes in the business' operational headcount; [c] QCA, Final Decision Benchmark Retail Cost Index for Electricity: 2011-12 May 2011; [d] QCA Benchmark Retail Cost Index for Electricity – various papers 2007-08 to 2010-11; [e] Commonwealth Government, Economic Statement, July 2010; [f] Current budget assumption reflects 0.5% salary progression above EBA; [g] Cost index: BRCI for 2011/12 published by QCA; [h] 2012/13 - CPI target from RBA, 2013/14 – CPI consistent with asset indexation.

We conclude from the above that there is not a consistent approach to cost indexation across the entities.

CPI as a proxy for infrastructure cost escalation

As the name suggests the Consumer Price Index was developed to map the cost of living for typical consumers in the public domain.

Queensland Urban Utilities has adopted CPI for items where other more appropriate indices (such as BRCI for electricity or the EBA agreement for labour) are not readily available. It was generally accepted by Queensland Urban Utilities during our interviews that CPI was not an ideal index as it covers the whole of the economy, however, it was the best readily available index.

We consider there is more work that Queensland Urban Utilities can do to fully understand the components of the costs that are sensitive to certain cost drivers and to improve cost escalation forecasting, including:

- Tracking actual cost escalations against CPI to determine the suitability of CPI
- Identification of the cost drivers for each cost category and their sensitivities (eg external labour costs, fuel and transport, exchange rate volatility, raw materials)

In our assessment CPI should only be used where other, more specific, information is not available. This is of particular importance where Queensland Urban Utilities is budgeting expenditure using the previous year's expenditure, and simply applying a growth and cost escalation index.

5.1.8. SKM's assessment

Queensland Urban Utilities has made progress in addressing the issues identified in the Authority's Final Report on SEQ Price Monitoring for 2010/11 since publication of that report. Queensland Urban Utilities has demonstrated to us that they are adopting a region wide (whole of entity) perspective to capital expenditure where appropriate. The policy for applying capital expenditure to the RAB is consistent with that of the Authority and consistent across all the entities. There is evidence that Queensland Urban Utilities is establishing processes to ensure a consistent approach to cost estimation for capital projects although we are unable to comment on the effectiveness of these systems given the capital project sample selection and the commencement date of these projects.

A standard summary documented is prepared for major projects which has a defined structure and which will both assist with prudent decision making and regulatory reporting. Documented strategies for major project implementation are being prepared incorporating risk reviews and risk mitigation measures. Similarly, Queensland Urban Utilities has a well document gateway review process for major projects.

Finally, the indexation factor applied by Queensland Urban Utilities is consistent with that applied by the Authority for other recent investigations and that used by Allconnex Water.

5.2. Budget formation

This section identifies our understanding of good industry practice for budget formation for capital expenditure and operating costs and compares the processes used by Queensland Urban Utilities to this practice.

5.2.1. Queensland Urban Utilities capital project budgeting process

The formation of Queensland Urban Utilities' capital budget process occurs in four stages as described below:

- Stage 1 Nov-Dec 2010 - Optimisation of the Five Year Programme

  A series of meetings are held between planning, operational, project management and finance staff to rationalise and review the five year capital programme. The aim of these meeting is to ensure that the latest available planning and operational information has been taken into account in developing the forward capital programme. The optimisation aims to present a capital programme that is prudent, efficient, affordable and deliverable.

- Stage 2 Jan 2011 - Prioritisation of the Five Year Programme

  In order to ensure that limited annual capital funds are directed to the highest priority works, a capital prioritisation model is used to prioritise works. Preference is given to projects that have contractual commitments or to ongoing works.

- Stage 3 Jan-Mar 2011 - Independent Review

  Proposed major projects are then subject to independent, external reviews to provide a suitable degree of planning rigour. Projects are evaluated on a range of criteria including design standards, growth projections, project justification, deliverability and cost. These reviews lead to further rationalisation of proposed capital works.

  For the 2011/12 budget further reviews were undertaken to take into account the impacts of the January 2011 floods, resulting in amendments to the capital budget.

- Stage 4 Feb-Apr 2011 - Budget Reviewed & Approved by Board

  The annual programme and five year programme listings are produced for presentation and approval by the Executive Leadership Team and Board.

We have seen evidence of Queensland Urban Utilities' five year commissioning model, including identification of projects for delivery over the next five years.

5.2.2. Queensland Urban Utilities operational expenditure budgeting process

We have reviewed the guidelines for the preparation of 2011/12 Queensland Urban Utilities budgets. The document provides a comprehensive guide to the development and approval process for the operating budgets including:

- Outline of the budget process
- Who has approved the process

- Responsibilities
- Budget approval and development
- Parameters to be applied (eg CPI)
- Review and approval programme/timetable
- Schedules to be produced

The major milestones in the 2011/12 operational budget development and approval process include:

Milestone	Date
Preparation of 'business as usual' budgets by service area	December 2010
Presentation of budgets to ELT	January 2011
CEO/CFO sign off	March 2011
Presentation of budget to Queensland Urban Utilities Board	March 2011
Budget approval by Queensland Urban Utilities Board	May 2011

Two forms of operating budget formation were seen to be used:

- Bottom up approach - where zero base budgets have been developed to estimate costs for the 2011/12 financial year
- Top down approach – cost and growth indices have been applied to historical costs

5.2.3. Good industry practice for CAPEX and OPEX budgeting

The following outlines what we consider to be good industry practice in capital expenditure and operating costs budgeting for regulated utilities. Most utilities use two basic forecasting approaches to develop capital expenditure and operating costs budget forecasts for their regulated businesses.

The first approach – "base year" forecast – involves extrapolating historical expenditure for a particular expenditure category. It generally requires justification that the base year expenditure is reasonable and efficient and that any one-off costs that would not be expected to apply in future years are identified and excluded from forecasts.

The second approach –"bottom-up" forecast – is developed by forecasting work units or quantities and standard unit rates. This type of forecast should be supported by explanation and justification of the work units forecast and that the unit rates proposed are reasonable and efficient.

It is not uncommon for a utility to use both of these approaches, with operating costs forecasts primarily driven by a base year extrapolation and capital expenditure forecasts by a bottom up approach, on a project-by-project basis.

Capital project budgeting

Capital project spend in a regulated business is required to be assessed against standard criteria of prudency and efficiency. That is, the following questions have to be answerable in the affirmative for any given project:

- Is the project needed for the regulated industry to deliver the level of service required in the future and is the timing of the project prudent?
- Is the cost reasonable (within industry norms) for such a project?

An underpinning tenet of an organisation's ability to demonstrate that its capital project expenditure programme is prudent and efficient is a good governance process for capital expenditure approvals.

We believe that good industry practice for the development of a capital projects budgets includes the following:

- The identification of projects which meet the requirements of prudency and efficiency
- Project prioritisation, including prioritisation across programs of work
- Consideration of the timing of projects and the ability to deliver the capital program
- A defined review and approvals process, including documentation of this process

In respect of supporting documentation required to gain approval for capital expenditure for a given capital project, we believe good industry practice should include:

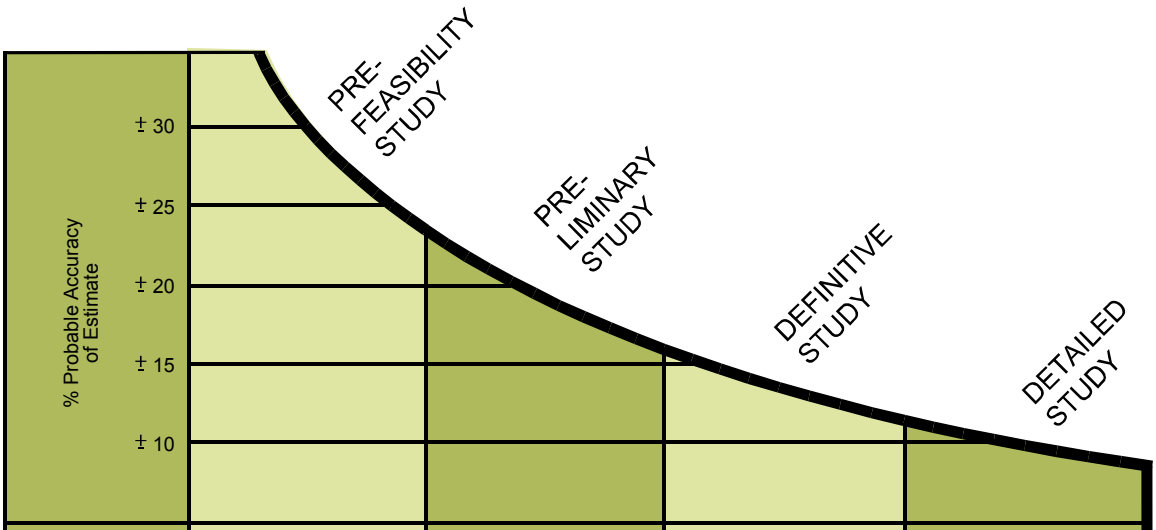
- A phased process, starting with a project outline, through to defined requirements for business cases and final approvals
- A tiered structure, with differentiated requirements and degrees of documentation and review for projects depending on their cost
- Fully supported capital expenditure approval documentation incorporating:
  - The project background/rationale
  - The project drivers, including reference to the Authority's drivers
  - The options reviewed to address the drivers, including the method of selecting the preferred option
  - Fully costed and financially evaluated option studies, including a "do nothing" option, preferably on a present value, or, if appropriate, a net present value basis
  - Where capital is constrained, explanation of why a project is proposed over others that may adhere to the above requirements
  - A defined scope of works for the preferred option

- The identification of project risks and how they will be managed
- A breakdown of the approved project cost and the basis of this cost estimate, including defined cost estimating procedures, including the treatment of contingencies
- The critical success factors of the project
- An implementation plan

For historic projects, the process should address:

- How the project was implemented
- How the project performed – successes and lessons learned
- How the project addressed the original need
- How the project addressed the critical success factors
- How the as-built cost compared with the original estimate
- If the as-built cost of the project changed the order of merit of the options considered at the options analysis stage

The level of supporting documentation will be dictated by the project size, project cost and the respective sign-off authority level within an organisation. The chart below illustrates the kind of detail we believe should be presented, and notes that the estimates used for many projects can be expected to have uncertainty of 30 percent or more.



Type of Estimate	Order of Magnitude	Preliminary	Definitive	Detailed
Provided Documentation	• Product capacity and Location • Cost Data on Similar Projects • Major Equipment List	• Preliminary Equipment List • Engineering Line Diagram • Plant Outline General Arrangement • Maps and Surveys • Bench Test Results • Nature of Facilities	• Equipment Specifications and Vendor Quotations • Construction Schedule • Electrical One Lines • Piping and Instrumentation Flow Diagrams • Soil Data and Architect Features • Site Survey and Labour Complete	• Bulk Material Specifications and Vendor Quotes • Construction Specification and Sub Contractor Quotations • Engineering Advanced Approximately 10%
Definition of Scope of Work	Conceptual	Approximate	Clearly Described Essentially Complete	Complete. Well Detailed
Estimating Procedure	Factoring	Combination of Factoring and Quantity Take-Off	Most Quantity Take-Off. Very little Factoring	Complete Quantity Take-Off
Use of Study	Comparison/ Rejection	Final Feasibility	Budget	Funding

- **Figure 3 Typical estimation accuracies and expected documentation**

In addition, the overall capital expenditure programme should be weighted equally through the respective regulatory periods. This strategy maintains steady and reliable stream of work for construction contractors and reduces the price impacts of the substantial capital works programmes during earlier years of the regulatory period.

Operational expenditure budgeting

In a regulated business it is necessary to demonstrate that a forecast operating costs budget is efficient and that the spend is necessary to maintain the required level of regulated service delivery, to meet or exceed regulated service delivery standards. Equally as important is the necessity to ensure efficient operation of assets delivering regulated services to enable them to continue to contribute to the regulated services efficiently over their remaining economic or specified life.

A further objective of operating costs budgeting is to achieve ongoing efficiency improvements of operational assets. Therefore, good industry practice for appropriate operating costs budgeting is generally based on the development of sound asset management and maintenance strategies that can improve the reliability and remaining operating life of assets. These strategies are, in turn, based on detailed and accurate asset registers that contain detailed asset information, not least:

- Asset age
- Installation/commissioning dates
- Date and nature of major modifications/upgrades
- Asset condition
- Remaining asset life

The starting point for measuring the efficiency of operating costs budgeting should be the *actual* expenditure in a base year. This should be assessed for efficiency and adjusted, if necessary, to a level considered to be reasonably efficient. Future-year operating costs forecasts are then based on extrapolating these base year costs against appropriate indices, taking into account planned and expected material changes to the asset base in future years and material changes in operation and maintenance practices.

A regulated utility's forecast operating costs over the upcoming regulatory period is an important input to the revenue forecasting process.

Typically, a regulator must review the extent to which the forecast operating costs is consistent with the provision of an annual revenue requirement consistent with the general regulatory principles of the regulated industry in question. These principles are that the allowed annual revenue requirement or maximum allowable return must fairly compensate the regulated utility for the economically efficient costs and risks it incurs in providing regulated services, to encourage:

- A stable and transparent commercial environment which does not discriminate between users
- The same market outcomes as would be achieved if the market for its regulated services was contestable
- Competition in the provision of its regulated services wherever practicable

- The commercial viability of the regulated utility, through the recovery of efficient costs associated with the regulated services, and a reasonable return on the utilities approved capital invested in its regulated assets and business systems
- Recovery of only those costs related to the provision of the regulated services
- Fairness in the charges made for the regulated services, including the progressive removal of cross-subsidies
- Maintenance of service delivery levels subsisting at the beginning of a regulatory period and an improvement of service delivery levels during the period contemplated by a regulator's final decision
- Maintenance of the regulated assets such that, at the end of regulatory period, the regulated assets are able to continue to provide regulated service delivery without above-average expenditure on upgrades or critical maintenance and continue the service delivery levels previously achieved

The nature of operating costs means there are elements that are controllable, such as deferring or bringing forward maintenance, or the amount of overtime worked. Moving to outsourcing or contracting some services can lead to apparent changes in operating costs within affected categories, particularly if the contracted services appear against a different operating costs category (for example, moving maintenance to "admin and general" if this is how the contracted services are categorised).

To understand the efficient level of operating costs requires an understanding of these underlying drivers, and the extent to which operational and accounting decisions will affect operating costs in individual years and over a regulatory period being reviewed.

Where operating costs varies from one year to another, a regulator will, by necessity, seek information that explains the underlying causes of these variations to determine the representative level of operating costs for an efficient base year.

This reasonably efficient level of expenditure should then be escalated forward through each year of the regulatory period under review, on the basis of its sensitivity to changes in the key drivers of an expenditure category and recognising material changes in the asset base in future years. For example, the key driver of meter-reading costs is likely to be customer numbers, since meter reading costs will increase as the number of customer accounts increase[6].

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[6] The number of customer accounts is considered a more relevant driver than the number of active meters since most of a meter reader's time is spent moving from one customer to the next.

In undertaking this analysis, due account should be taken of the sensitivity of expenditure in a particular cost category to its key cost driver. Meter-reading costs, for example, have a high variable cost component and will therefore be very sensitive to customer numbers, whereas customer account supervision costs are largely fixed and will be much less sensitive to customer numbers. Historical expenditure trends in a particular cost category may be analysed to help assess the appropriate sensitivity of expenditure to a key cost driver. Similarly, plant operating costs will be split between fixed and volume-related costs.

Equally, customer densities, terrain over which the regulated assets are built, climate and economic conditions (such as strength of an economy and resultant impact on contractor costs), can impact on a regulated industries operational expenditure.

5.2.4. Comparison of Queensland Urban Utilities' budgeting process with good industry practice

From our examination of the 2011/12 budgeting process it is apparent that the two budgeting methodologies applied is largely dependent on the geography being considered.

In the former Brisbane Water geography, quantities for commodity based expenditure, such as electricity, chemicals and sludge handling, are all estimated from models that have been developed in-house. These zero-base budgets provide some rigour to the budgeting process and allow Queensland Urban Utilities to readily identify the cost drivers for each category.

However, in the western geographies (Ipswich, Lockyer Valley, Scenic Rim and Somerset) these same cost category budgets are based on historical costs, with relevant cost escalation and growth indices applied. We consider this an appropriate budgeting method; however, it should be underpinned by the establishment of the base year as representative of efficient expenditure.

We consider the reasons for the difference in operating budgeting process to be:

- Business model. The establishment of Queensland Urban Utilities brought together three separate regions with differing business processes
- Maturity of the business. The organisation has been in existence for a little over one year and insufficient time has elapsed for the good practices of Brisbane Water to be rolled out across the whole organisation
- Availability of information. Models used to information zero base budgets are reliant on the quality of information. As noted in the Authority's 2010/11 Interim Price Monitoring Report, the required information transferred from Councils was in various states of completeness and reliability

We noted in responses to our requests for information that the information from the western geographies of Queensland Urban Utilities was not as readily available as the information for Brisbane. When queried, Queensland Urban Utilities responded that Brisbane formed the majority of operating expenditure. Whilst we accept that there is some merit in focusing on the major cost centres, we consider there is considerable benefit in applying these well developed tools to the geographies outside of Brisbane. Firstly, this would provide a consistent budgeting approach across the organisation, and secondly, we expect this would help realise the intended benefits of water authority reforms right across Queensland Urban Utilities operating area.

We consider this a core activity for the integration of the business and would expect that in future years Queensland Urban Utilities will either confirm the efficiency of the base year to which indices are applied, or will apply the zero based budget tools used in Brisbane to the other geographies.

5.3. Standards of service review

Queensland Urban Utilities has provided details of its service standards in Section 3 of its 2011/12 Information Return. This addresses customer service standards including complaints and dispute resolution, customer consultation, accounting, metering or billing as well as design standards for both water and wastewater.

Queensland Urban Utilities' operating obligations are contained in the following legislative instruments:

- *Water Act 2000*
- *Water Supply (Safety and Reliability) Act 2008*
- *Sustainable Planning Act 2009*
- *Environmental Protection Act 1994*
- *Environmental Protection (Water) Policy 2009*
- *South East Queensland Water (Distribution and Retail Restructuring) Act 2009*
- *Customer Water and Wastewater Code*, Queensland Water Commission 2011

5.3.1. Customer service standards

On 1 January 2011, a Customer Water and Wastewater Code was released by the (then) Minister for Natural Resources, Mines and Energy and Minister for Trade. This document sets out the rights and obligations of distributor-retailers and their customers relating to the availability of water and sewerage services. The Customer Water and Wastewater Code covers customer service obligations, as well as the rights of all residential customers and those small business customers who are using less than 100 kilolitres of water per year. The code requires distributor-retailers to have a customer

service charter and customer service standards. The charter is to set out the rights and obligations of both service provider and customer, while the service standards present the minimum and guaranteed service standards.

To meet the requirements of the Water *Supply (Safety and Reliability) Act 2008*, Queensland Urban Utilities had a responsibility to align and establish Customer Service Standards (CSS) across the regions by 1 July 2011. Queensland Urban Utilities satisfied this requirement and published the aligned standards of service on its website and provided it to customers in late 2010.

The legislation for the water reform transitioned the strategic asset management plans (SAMPs) and related service standards and customer service standards from councils to Queensland Urban Utilities as at 1 July 2010. Accordingly, these service standards applied from 1 July 2010 until changed in 1 July 2011.

These unified service standards will be included within Queensland Urban Utilities' Water Netserv Plan, which will replace the SAMP and other plans. The plan must provide an overview of Queensland Urban Utilities' infrastructure planning and development plans over the next 20 years and support and reflect the SEQ Regional Plan, and the land use planning and assumptions of Queensland Urban Utilities' participating councils. The Water Netserv Plan will be a key tool for future streamlined asset management and economic regulation, bringing together a number of asset and planning related activities, such as SAMPs and priority infrastructure plans (PIPs) undertaken in accordance with the *Sustainable Planning Act 2009*. Queensland Urban Utilities is required to have its Water Netserv Plan in place by 1 July 2013.

Queensland Urban Utilities indicates that substantial progress has been made towards completion of the Water Netserv Plan, which includes desired standards of service for water infrastructure (previously contained in the PIPs of Participating Councils). Within its information return Queensland Urban Utilities states:

> *"Our draft Water Netserv Plan is being prepared in two distinct but related parts. Part A broadly deals with strategies, infrastructure, planning, standards, connections and charging, while Part B covers operational and technical plans. A draft of Part A was released to the public in May 2011as part of our community engagement campaign, with comments sought, received and collated up to 24 June 2011. A draft of Part B will be presented to the Board in the third quarter of 2011."*

We believe that the development of a Water NetServ Plan provides a good opportunity for Queensland Urban Utilities to develop a consistent and structured approach to planning for all districts, and the completion of this plan is required[7].

5.3.2. Design standards

Queensland Urban Utilities has design standards for Water Supply and Sewerage.

According to Queensland Urban Utilities their water distribution network is planned and designed to perform the following primary functions:

- To maintain sufficient customer water pressures when the system is subjected to peak load conditions
- To provide fire-fighting capacity for the relevant fire authorities (e.g. Queensland Fire and Rescue Service)
- To provide enough network connectivity that customers continue to receive an adequate level of service during planned or unplanned network events
- To be highly reliable over their 80-100 year planned lifespan, as underground water mains are typically expensive to build and repair

Queensland Urban Utilities advised that inflow and infiltration have a significant influence on asset design and maintenance and therefore cost. It is not possible to eliminate inflow/infiltration from a traditional sewerage system and the extent of actions to reduce it must strike a sensible balance between costs and benefits. All new reticulation sewers installed within the service area are required to be welded polyethylene pipe systems (NuSewers). This is essentially a sealed system that should experience dramatically reduced levels of inflow/infiltration compared to traditional systems.

We have been advised that Queensland Urban Utilities' network design is governed by the Queensland Urban Utilities Design Standards, which set minimum material and construction standards to be met to ensure reliable asset performance. These are developed through benchmarking and consultation within the Australian water industry. The following tables outline the guidelines used by Queensland Urban Utilities for water, **Table 14**, and for sewerage, **Table 15**.

[7] Queensland Urban Utilities released a draft Water NetServ Plan in May 2011.

Table 14 Water supply network desired standards of service

Measure	Planning criteria (qualitative standards)	Design criteria (quantitative standards)
Reliability/ continuity of supply	All development receives a reliable supply of potable water with minimal interruptions to their service.	• Local government standards in planning scheme and planning scheme policies • Customer service standards • Customer service obligations
Adequacy of Supply	All development is provided with a water supply that is adequate for the intended use.	• Water Service Association of Australia codes • IPWEA standards • Customer service standards • Local government standards in planning scheme and planning scheme policies
Quality of supply	Provide a uniform water quality in accordance with recognised standards that safeguards community health and is free from objectionable taste and odour.	• The Australian Drinking Water Guidelines developed by the National Health and Medical Research Council
Environmental Impacts	The environmental impacts of the water supply network are minimised in accordance with community expectations.	• Compliance with the requirements of the Environmental Protection Act 1994 and associated Environmental Protection Policies and the Water Act 2000
Pressure and leakage management	The water supply network is monitored and managed to maintain the reliability and adequacy of supply and to minimise environmental impacts.	• System Leakage Management Plan (Chapter 3, Part 3, Division 1A Water Act 2000)
Infrastructure design/planning standards	Design of the water supply network will comply with established codes and standards.	• Water Supply Code of Australia—Water Services Association of Australia— WSA 03–2002 • The Australian Drinking Water Guidelines developed by the National Health and Medical Research Council • Planning Guidelines for Water Supply and Sewerage—Department of Natural Resources and Water (NRW) • Local government standards in planning scheme policies

Source: (*2011/12) Information Return – Annex D* (Queensland Urban Utilities, 2011)

- **Table 15 Sewerage network desired standards of service**

Measure	Planning criteria (qualitative standards)	Design criteria (quantitative standards)
Reliability	All development has access to a reliable sewerage collection, conveyance, treatment and disposal system.	• Local government standards in planning scheme and planning scheme policies • Customer service standards • Customer service obligations
Quality of treatment	Ensures the health of the community and the safe and appropriate level of treatment and disposal of treated effluent.	• Local water quality guidelines prepared in accordance with the National Water Quality Management Strategy • Queensland Water Quality Guidelines 2006—Environmental Protection Agency (where local guidelines do not exist) • National Water Quality Guidelines—National Water Quality Management Strategy (where local or regional guidelines do not exist)
Environmental impacts	The environmental impacts of the sewerage network are minimised in accordance with community expectations.	• Compliance with the requirements of the Environmental Protection Act 1994 and associated Environmental Protection policies
Effluent re-use	Reuse effluent wherever possible.	• Guidelines for Sewerage Systems: Reclaimed Water — February 2000 • Queensland Water Recycling Guidelines — December 2005
Infrastructure design/planning standards	Design of the sewerage network will comply with established codes and standards.	• Planning Guidelines for Water Supply and Sewerage—NRW • Sewerage Code of Australia— Water Services Association of Australia—WSA 02—2002 • Sewerage Pumping Station Code of Australia—Water Services Association of Australia—WSA 04—2005 • Local government standards in planning scheme and planning scheme policies

Source: *Information Return 2011/12 – Annex D* (Queensland Urban Utilities, 2011)

5.3.3. SKM's assessment

As outlined above, Queensland Urban Utilities has developed a single consolidated set of customer service standards applicable to all customers within the service area. We believe that they are well advanced in the development of their NetServ Plan and will be completed within the proposed timeframe ie by 1st July 2013.

A high-level comparison of the customer standards currently used by each of the entities is shown in **Table 16**. Where information is provided, the service standards are comparable, with the exceptions of non-urgent response times.

- **Table 16 Comparison of standards of service**

	Queensland Urban Utilities	Allconnex Water	Unitywater	Comment
Water				
Health, physical and chemical	100% Tests meeting NHMRC Australian Drinking Water Guidelines	98% Tests meeting NHMRC Australian Drinking Water Guidelines	>98% of tests that comply with Australian Drinking Water Guidelines	The service standards are comparable
Complaints	Water quality complaints ≤8 complaints per 1000 properties per year	Water quality complaints <5 per 1000 properties connected per year	Drinking water quality complaints <10 per 1000 properties connected per year	The service standards are comparable
Incidents	Water quality incidents ≤10 per 1000 properties per year	No information provided	Water quality incidents <5 per 1000 properties connected per year	Of the information available the supply volumes are comparable
Water supply	90% restoration of services within 5 hours	95% restoration of services within 5 hours	>90% restoration of services within 5 hours following a “priority 1” event	The service standards are comparable
Incident response – high priority	100% response time for “urgent” events within 1 hour for urban areas 100% response time for “urgent” events within 2 hours for rural areas	80% response time for “priority 1” events within 1 hour	>90% response time to “priority 1” events within 1 hour	The service standards are comparable
Incident response – non-urgent	100% response time for “non-urgent” events within 24 hours for urban areas 100% response time for “non-urgent” events within 72 hours for rural areas	80%response time within 36 hours for “non urgent” fault, but significant in the belief of the customer (“priority 3”)	>95% response time to “non-urgent” events within 48 hours	The service standards are comparable
Planned interruptions	Minimum of 48 hours notification of planned interruptions	No information provided	Minimum of 48 hours notification of planned interruptions	Of the information available the supply volumes are comparable

	Queensland Urban Utilities	Allconnex Water	Unitywater	Comment
Unplanned interruptions to supply	Unplanned less than or equal to 100 per 1000 connections per year	Unplanned less than 150 per 1000 properties connected per year	Unplanned less than 15 per 1000 properties connected per year Unplanned interruptions to supply <30 per 100 km of main per year	Unitywater has a tighter service standard, while the others are comparable
Interruptions	No information provided	No information provided	No information provided	Information was not available
Pressure	Water pressure for urban areas >210kPa min (*21m head*) Water pressure for trickle feed and private booster areas >100kPa min (*10m head*)	>22 metres static head in the main adjoining the property boundary (220*kPa*)	Water pressure at property boundary >210kPa (*21m head*)	The service standards are comparable
Volume	Minimum 25 litres per minute at the meter for urban areas Minimum 3.2 litres per minute at the meter for rural, trickle feed areas	No information provided	Minimum 23 litres per minute at the meter	Of the information available the supply volumes are comparable
Wastewater				
Incident response - Priority	100% response time for “urgent” events within 1 hour for urban areas 100% response time for “urgent” events within 2 hours for rural areas	80% response time for “priority 1” events within 1 hour	>90% response time to “priority 1” events within 1 hour	The service standards are comparable
Incident response – non-urgent	100% response time for “non-urgent” events within 24 hour for urban areas 100% response time for “non-urgent” events within 72 hour for rural areas	80%response time within 36 hours for “non urgent” fault, but significant in the belief of the customer (“priority 3”)	>95% response time to “non-urgent” events within 48 hours	The service standards are comparable

	Queensland Urban Utilities	Allconnex Water	Unitywater	Comment
Sewerage overflows	No information provided	Dry weather wastewater overflows less than 20 per 100 km of mains per year	Dry weather wastewater overflows less than 5 per 100 km of mains per year	Unitywater has a tighter service standard
		Dry weather overflows affecting customers less than 5 per 1000 properties per year	Dry weather overflows affecting customers less than 5 per 1000 properties per year	Of the information available the supply volumes are comparable
Odour complaints	No information provided	Less than 3 per 1000 properties connected	Less than 3 per 1000 properties connected	Of the information available the supply volumes are comparable
Sewer main breaks	No information provided	Sewer main breaks and chokes less than 50 per 100 km of mains per year	Sewer main breaks and chokes less than 25 per 100 km of mains per year	Of the information available the supply volumes are comparable
Sewer infiltration	No information provided	No information provided	No information provided	Information was not available

5.4. Asset management and condition assessment

Prior to the formation of Queensland Urban Utilities (and the other distributor-retailers), council-owned water businesses were required to prepare and adhere to a Strategic Asset Management Plan. The plan outlined the services provided as well as the standards that those services would meet. The plans also outline the infrastructure required to meet these standards, along with operations, maintenance, and renewals strategies to be adopted, and the means by which activities would be financed.

As discussed previously, Queensland Urban Utilities is required to develop an approved Water Netserv Plan to replace the strategic asset management plans inherited from its participating councils.

According to Queensland Urban Utilities, in developing an organisation-wide approach to asset management, Queensland Urban Utilities has integrated key asset management components into the way its assets are operated, maintained, renewed and enhanced. This integration ensures:

- The applicable operate and maintain strategy is applied, ensuring the required levels of service are met and the asset operates for its intended life
- Asset rehabilitation/renewal requirements are identified, justified and then applied at the required point in the asset life cycle
- Cross-referencing between the renewal and the growth drivers is undertaken to optimise the level of investment required for future system demands

Queensland Urban Utilities' approach for managing the maintenance and renewals of its existing asset base is adopted from the four basic/fundamental strategies of asset management:

- Periodic maintenance - recurrent preventative works carried out to a predetermined time frame, be it calendar and/or equipment run time
- Condition based - where the degradation in the state of the asset is monitored/measured and when/if it reaches a critical point, proactive corrective work is identified and implemented to prevent failure. This is applied at a periodic frequency or in real time
- Run to fail - where the consequence of asset failure is considered to have negligible impact upon customer service levels, process, environment, safety and/or financial considerations when compared to the other three strategies. Asset redundancy is often applied as a management strategy for this approach
- Design out/renew - where the asset is no longer providing the required level of service, and/or has come to the end of its functional or economic life, it is identified to be 'renewed' or 'rehabilitated'

A combination of these four strategies is applied to Queensland Urban Utilities' asset base taking into consideration the standards of service, consequence and likelihood of failure, legislation and expected life.

Queensland Urban Utilities' asset base ranges from civil infrastructure with an expected life of 100+ years through to mechanical and electrical equipment with a design life in some cases of less than eight years. This includes tanks, wet wells, pipe work, pumps, variable speed drives, and instrumentation and control systems.

As different standards of service, consequence and likelihood of failure, legislation and predicted life are applied to different groupings of assets, the asset base is classified into 'asset classes'. This ensures that a common application of the four fundamental strategies is achieved for similar assets.

The delivery and implementation of the asset management strategy is achieved through the operational maintenance, and capital renewal funding streams, and their associated programmes.

The operational maintenance programme has two main priorities:

- To maintain the existing asset base to meet safety, service standards, performance and legislative requirements
- To inspect and assess the asset base to understand its condition profile and to identify required preventative and/or corrective works

Appropriate maintenance expenditure will preserve the service standard of the assets in the short term and will ensure that the identification of capital renewal works is achieved at the right time in the asset life cycle. Appropriate preventative maintenance expenditure reduces reactive expenditure and overall life-cycle costs.

The operational maintenance budget was developed following the zero-base budget approach. This bottom-up approach was applied to the following four key components:

- Planned schedule maintenance - the planned maintenance schedule of works for each maintainable asset are developed. The planned maintenance schedule is forecast over the financial year. Against each programme of works material, services and resource requirements and associated costs are applied
- Corrective maintenance - the historical corrective maintenance expenditure trend for each asset class is analysed. This historical trend is cross-referenced with the inspection work as per the maintenance schedule. Costing is adjusted for the following financial year

- Responsive maintenance - the historical responsive maintenance expenditure trend for each asset class and work type is analysed. Costing is adjusted for the following financial year with consideration to asset condition
- Special project maintenance - the special projects to be undertaken in the financial year are listed, justified and budgeted as separate non-capitalised projects. This includes items such as safety improvements, minor modification, blasting and painting

Since 1 July 2010 Queensland Urban Utilities has been working to align the operational maintenance approach, methodology and programmes across the service area.

There has been a significant amount of effort in this area and as a result the following has been achieved:

- The active asset base and all available information have been captured into the works management system complete with a standardised maintenance strategy applied, forecasted and costed. This has been based upon previous proven maintenance methodologies applied in the five service areas
- The zero base budgeting approach has been applied across the five service areas with a first generation budget in place for the outer western areas
- The geographical information systems (GIS)/works management interface programme is underway to capture the passive assets in detail into the works management system. This is essential to correctly account for works being undertaken in the field and identifies asset information in the works management system

Queensland Urban Utilities' capital asset renewal/rehabilitation programme focuses on assets that are in poor condition, unable to be maintained and/or are under-performing. These assets include those approaching the end of their lives, as well as those showing signs of early failure.

The capital asset renewal/rehabilitation programme is supported by feasibility studies, minor capital submissions, and individual asset class rolling programmes governed by the rules stipulated in the associated business cases. The rules governing the inclusion of works into the programme are broken into two classifications, performance and obsolescence/condition base.

Performance capital expenditure relates to an asset that is no longer fit-for-purpose due to poor performance. This expenditure is typically associated with assets where access and/or other constraints prohibit the implementation of a suitable condition assessment programme. This includes retail water mains, bio-reactor diffuser membranes, advanced water treatment membranes and pumps. Works are identified through operational monitoring and historical failure analysis of the asset base.

Obsolescence/condition base expenditure relates to an asset's life cycle. It seeks to avoid the escalation of corrective and responsive maintenance expenditure by providing for the equipment to be replaced and refurbished when the asset is no longer fit for purpose due to:

- Defects being identified that have or will result in a failure of the asset
- The asset being beyond its intended life and no longer supported in the context of operations and maintenance activities

This expenditure is identified and driven through various condition inspection programmes such as operational reporting, inspections (including CCTV), structural audits and facility condition assessments.

Queensland Urban Utilities employs a condition rating or similar for all of its assets. This rating identifies works required as part of this programme. The drivers for the condition rating are failure rates, characteristics, risk (such as safety, environment, customer levels of service, financial), un-serviceability, obsolescence, replacement of whole assets rather than component parts, bulk replacement strategies, unavailability of spare parts, premature aging and performance.

Since 1 July 2010, Queensland Urban Utilities has been working to align the capital renewals approach, methodology and programmes across its service area.

This was partially achieved for the 2010/11 financial year. A significant effort has been undertaken in this area and, as a result, the capital renewal framework has been implemented, and this aligns capital renewal works across Queensland Urban Utilities' service area into common programmes complete with standardised justification rules, documentation, and first-generation business cases.

5.4.1. SKM's assessment

From our review of Queensland Urban Utilities asset management and condition assessment processes we consider that Queensland Urban Utilities' practices are appropriate for a water and wastewater distribution and retail utility of Queensland Urban Utilities standing and are in keeping with good industry practice. The adoption of a risk, condition and service standard based assessment to determine whether a run to failure, periodic maintenance or condition based approach to maintenance of a particular asset should be adopted should lead to optimised operation and maintenance costs across the asset base.

There is clear evidence of Queensland Urban Utilities implementing a standard approach to asset management across its regions including its approach to capital renewals evaluation, programming and implementation.

The work undertaken and being undertaken in capturing information on the asset base and recording this in the works management system together with the development of a GIS/works management interface program will assist Queensland Urban Utilities in prioritising asset replacements and preventative maintenance activities.

5.5. Procurement

Queensland Urban Utilities provided the following documentation on its procurement processes for review:

- Queensland Urban Utilities Procurement Manual v1.0 10 January 2011

This manual encompasses Queensland Urban Utilities' policy direction and procedures for procurement contracting and tendering.

5.5.1. Procurement policies and procedures

Queensland Urban Utilities' Procurement Manual outlines the requirements, responsibilities and methods that Queensland Urban Utilities utilises in the procurement of goods and services. The Procurement Manual makes reference to and states that Queensland Urban Utilities procurement processes are subject to the State Procurement Policy and that Queensland Urban Utilities will seek to advance Government priorities for procurement. It goes on to state that Queensland Urban Utilities will comply with the Australia New Zealand Government Procurement Agreement and will use the Queensland Government Chief Procurement Office website to publish all open tender opportunities.

The Procurement Manual states that Queensland Urban Utilities will:

- Spend locally, where possible for low value low risk items
- Implement a procurement complaints procedure
- Integrate the practice of sustainability into the procurement of goods, services and construction

The document also states Queensland Urban Utilities' procurement principals as being:

- Open and effective competition
- Best value
- Enhancing and development of local business and industry
- Environmental protection
- Ethical behaviour and fair dealing

The Procurement Manual requires that Queensland Urban Utilities will prepare a Corporate Procurement Plan by 30th June each year setting out procurement objectives, strategies, targets and annual comparison against targets as well as defining the role of the procurement function, structure and systems. In addition Significant Procurement Plans are to be developed for capital projects over $5,000,000 and high value, high criticality high risk procurements.

Delegations and thresholds

Procurement delegations are currently in draft form and awaiting review and approval by the Queensland Urban Utilities Board. These delegation thresholds are as follows:

- Capital and operating expenditure greater than $5,000,000 – Board approval (through Major Projects Executive)
- Capital and operating expenditure up to $5,000,000 – Chief Executive Officer approval (through Procurement Advisory Group of which the Chief Executive Officer is the chair)
- Capital and operating expenditure up to $1,000,000 – Chief Financial Officer and Chief Operating Officer approval

As a part of its procurement processes, Queensland Urban Utilities has established a Procurement Advisory Group and a Major Projects Executive. The purpose and scope of the Procurement Advisory Group is to review project feasibility prior to going to market, the intended procurement plans and to provide advice and recommendation to the Chief Executive Officer on the award of contracts as well as ensuring that due process is followed. The Procurement Advisory Group reviews and advises on capital expenditure projects between $1,000,000 and $5,000,000 for recommendations to the Chief Executive Officer and on operational expenditure contracts between $1,000,000 and $5,000,000 for recommendations to the Chief Executive Officer and on operational contracts over $5,000,000 for recommendations to the Board. Capital expenditure contracts over $5,000,000 are considered by a Major Projects Executive and the Board.

The role of the Major Projects Executive is to review the feasibility, pre-market, post market and project close outs for projects over $5,000,000 and to provide advice to the Board so that the Board can authorise going to market for such projects. As with the Procurement Advisory Group, the Major Project Executive has a remit of ensuring that due process has been followed.

The Procurement Manual also establishes the thresholds for process to follow for seeking offers for supply of goods and services as follows:

Threshold	Minimum Competitive Process Requirements	Offer Documentation
Under $2,500	One verbal quote	Memo
$2,500 to $5,000	Two verbal quotes	Memo
$5,001 to $10,000	Two written quotes	Written offer
$10,001 to $100,000	Three written quotes	Invitation to offer document – quotation (short form)
$100,001 to $500,000	Three formal quotes	Invitation to offer document – quotation (long form)
Above $500,000	Open Tender (where a contract does not exist)	Invitation to offer document – Tender
	Three formal quotes where a contract does exist	Invitation to offer document – quotation (long form)

Goods and services may be procured through two main contact types:

- A standing offer arrangement being a contract that allows orders under it
- Contract for one off purchases

Standing offer arrangements include:

- Panel arrangements
- Preferred supplier arrangements
- Pre-qualified supplier registers

Under these arrangements Queensland Urban Utilities has the ability to place multiple orders with the suppliers contracted under panel arrangements or preferred supplier arrangements. These arrangements are intended to improve the efficiency of procurement in terms of time and cost.

Tendering and tender evaluation

The Procurement Manual also details the process for developing and issuing invitation to tenders and tender evaluation.

Public tenders are invited for the provision of goods and services above $500,000 (and below this figure where identified in the premarket submission). Queensland Urban Utilities uses the Queensland Government Chief Procurement Office e-tendering website which allows Queensland Urban Utilities to advertise and receive tenders electronically.

A tender evaluation plan is required to be developed and included with any pre-market submission for a procurement exceeding $100,000. The plan is required to describe the method by which tenders are evaluated including the criteria to be used for the evaluation and the evaluation method taking into account confidentiality and probity requirements.

Tender returns are required to be evaluated against:

- Compliance with mandatory requirements, condition of offer and draft contract
- Technical worth/effectiveness
- Price
- Risk

Probity

The Procurement Manual also sets out the processes put in place to ensure 'Ethical Behaviour and Fair Dealing'. This includes for the appointment of a probity auditor for contracts in excess of $5,000,000 as well as procedures for managing disclosure of information, conflicts of interest and other matters of probity.

5.5.2. SKM's Assessment

Queensland Urban Utilities has produced a comprehensive procurement manual which sets out its procurement policy and procedures covering all aspects of its purchasing process. The manual only briefly deals with contract and supplier performance management such as project delivery and close out however, it references guides on Contract Management and Major Projects Contract Management which are stated as being under development.

In this and in a number of other respects, such as Board approval for stated delegated authorities, the Procurement Manual and documentation of contract management processes may be considered as 'work in progress'. Although we consider that the outlined policies and procedures represent good industry practice we believe that there could be greater linkage demonstrated in the Procurement Manual between procurement policies and procedures and other business policies and procedures. For example linkage with quality approvals procedures, environmental policies, asset management policies.

5.6. Cost allocation

Section 3.4 of the Authority's Information Requirements for 2011/12 outlines the principles for allocation of costs. In summary, operating costs are required to be disaggregated according to the following categories:

- Each activity (ie water, wastewater and non-regulated services)
- Each geographic area (ie Brisbane, Ipswich, Lockyer Valley, Scenic Rim and Somerset)
- Each core service (ie drinking water, other non-core water, wastewater via sewer, trade waste, other non-core wastewater)
- Each asset class and cost driver (ie growth, renewals, improvements and compliance)

- For subsequent years (ie beyond the interim price monitoring period) for each customer group

Allocations are required for revenue, regulatory asset base, capital expenditure and operating costs. Allocations must be made on the principle that:

a) Amounts are directly attributable to that category
b) Amounts that are not directly attributable must be allocated on a causal basis, except where a causal relationship cannot be established. Here, causal allocation means that the allocation base is the most significant trigger of consumption or utilisation of the resources or services represented by the costs

Amounts may be allocated on a non-causal basis provided that:

a) There is likely to be a strong correlation between the non-causal basis and the actual cause of resource or service consumption
b) The cost to derive the causal allocation outweighs the benefits of allocating items on that basis
c) The aggregate of the amount to be allocated is not material

5.6.1. Cost allocation for operating expenditure

We have examined Queensland Urban Utilities 2011/12 Information Return and completed 2011/12 Information template and reviewed the allocation of costs applied by Queensland Urban Utilities.

Costs are captured in responsibility centres that reflect the organisation structure. Work orders are also used to capture costs for specific activities or projects across the organisation. Accounting codes capture costs according to the nature of the expenditure.

Activity codes

Activity codes are used to allocate direct and indirect costs across five products and five regions.

Direct costs, where available, are charged to water, sewerage, asset creation and non-regulated services. Remaining costs are captured in support services and allocated through a cost allocation process at the end of each month.

Support costs are allocated at three levels – direct labour on-costs, local support costs and corporate overheads. Direct labour on-costs are the labour costs relating to costs such as sick leave, annual leave, superannuation and payroll tax. Local support costs relate mainly to local management and support staff within each department (sub-units within branches). Corporate costs include the majority of the costs of support functions of finance, human resource management, computer systems management and corporate services.

Trade waste and wastewater via sewer

Queensland Urban Utilities has used a causal allocation between trade waste and wastewater via sewer for Brisbane.

The methodology used to develop the cost allocation is as follows:

- The cost drivers have been identified as transport and flow, biological oxygen demand, suspended solids, total nitrogen and total phosphorus for treatment.
- Typical loads for residential and trade waste customers for the above cost drivers have been calculated based on historical and technical data
- For the major cost centres for wastewater treatment (electricity, chemicals, sludge, planning and overheads) percentage allocations have been assumed (in consultation with operational staff) for the above cost drivers and for different stages in the treatment plant (eg pre-treatment, primary treatment, biological treatment etc). These allocation percentages have been applied to total operating cost for wastewater to calculate unit costs
- Unit costs have been multiplied by the calculated loads for residential and trade waste customers to determine the appropriate cost allocation (82 percent wastewater via sewer, 18 percent trade waste)

5.6.2. SKM's assessment

Recycled water costs

We note that recycled water has not been disaggregated into a separate cost category.

We recommend that Queensland Urban Utilities investigates an appropriate allocation methodology for this service to support the nominated tariffs for recycled water.

Trade waste and wastewater via sewer allocation

We have reviewed the model used to allocate costs between trade waste and the wastewater via sewer services. The overall methodology and assumptions are sound. Where available, measured data has been used to inform the allocation.

We undertook a short sensitivity analysis for the following parameters:

- Allocation of the MAR between transport and treatment
- Trade waste sewer loads – revised to the loads assumed for the various trade waste categories detailed on the Queensland urban Utilities website.

Our analysis shows a fairly robust calculation, with allocation percentages varying less than two percent. Nonetheless, we recommend Queensland Urban Utilities undertakes sensitivity testing and

use actual data for the cost allocation between treatment processes (where available) in place of operator estimates.

We also consider that the risks are not adequately captured. This would include risks of business types and risk of contaminants other than those used in the analysis entering the wastewater system.

In our opinion the methodology used conforms to the Authority's requirements for causal allocation of operating costs.

5.6.3. Cost allocation for capital expenditure

Queensland Urban Utilities allocates cost for capital expenditure based on its assessment of the relevant driver(s). For a project where Queensland Urban Utilities assesses that two or more drivers are relevant the allocation of a percentage to each driver appears to be applied simplistically ie 50:50.

As the allocation of cost is a sequential action after the determination of the applicable drivers, an erroneous identification of a driver results in inappropriate allocation of cost. Consequently the determination of the correct driver(s) is important.

5.6.4. SKM's assessment

Our review of the information provided, in particular the sample selection, indicates that there are occasional varied and inaccurate determination of the drivers and consequently the cost allocation.

Projects responding to instances of sewage overflow appear to be assigned the compliance driver, without considering the cause as opposed to the effect. Many overflow incidents are caused by the connection of too many households to a sewerage system with a current fixed capacity. This is due to inappropriate delay in augmentation responding to growth. This inappropriate action of not providing adequate capacity should not result in the perpetualisation of inappropriate actions by nominating compliance as the driver, when timely action would have determined growth as the appropriate driver.

In addition the level of sophistication in assessing cost allocation percentages should be increased. While a project may involve both relining a sewer and the installation of an adjacent sewer to respond to growth; the cost allocation should be updated when accurate cost estimation is available. The continued use of a 50:50 allocation, which is potentially reasonable at the initiation stage, after more detailed cost estimation and/or receipt of a tender, is not appropriate. As a project progresses the more detailed costs available should inform the update of the cost allocation.

5.7. Asset Lives

Queensland Urban Utilities has provided an information return outlining nominal asset lives for use in economic regulation to depreciate at the asset class level.

The Authority's information requirement template allows information to be provided on the following two sheets.

- 5.8.1.1 Asset Lives Details for Regulatory Asset Base
- 5.8.1.2 Asset Lives Details for Regulatory Asset Base - Tax Purposes

These categories are considered below.

Within their Return Queensland Urban Utilities included the following in relation to regulatory depreciation:

> *"Depreciation for regulatory purposes is based on RAB values. Depreciation calculated from the fixed asset registers is used to provide an average remaining life by asset class as at 1 July 2008. This average life is then used to calculate depreciation on the opening value of the asset class. In addition 50% of each year's 'as-commissioned' capital expenditure ('as-incurred' for 2008/09 and 2009/10) is depreciated at the nominal life assigned to the each asset class. Given the additional flexibility of the QCA data template this year, several asset classes have been assigned different nominal lives between water and sewerage. This allows for increased accuracy in the depreciation profile."*

In relation to regulatory tax depreciation they included:

> *"Opening tax values from the financial accounts were used for regulatory purposes. The average tax lives of assets as at 1 July 2008 were estimated using depreciation as for regulatory depreciation. Nominal tax lives were assigned to assets based on the Australian Master Tax Guide, 2011. Where multiple lives apply to an asset class, such as pump stations, the Brisbane asset register was used to calculate an average for the asset class."*

5.7.1. Useful lives for new assets

Information on asset lives for major assets, such as reservoirs, treatment and pump stations have been provided in the Authority's information requirement template. The only categories not completed were as follows: water treatment (as expected, Queensland Urban Utilities does not have any water treatment plants), land, distribution infrastructure not included in another category and support services.

Table 17 shows the asset lives for new assets.

- **Table 17 Asset lives for new assets**

Asset Class	Description	Nominal Life
Water		
Distribution infrastructure	all mains and fittings	70
Reservoirs		90
Pump stations		25
Telemetry/SCADA		10
Meters		15
Wastewater		
Distribution infrastructure	all mains and fittings	65
Pump stations		30
Telemetry/SCADA		10
Meters		15
Treatment plants		25
Support		
Billing Systems		5
Corporate Systems		10
Buildings	not housing infrastructure	60
Sundry plant & equipment		10
Establishment Costs		5

Source: *Data template* (Queensland Urban Utilities, 2011)

Supporting documentation has been provided documenting the lives of assets for each region within Queensland Urban Utilities, as listed below:

- *Final Eco BCC FAR Jun08 FY10.xls*
- *Final Eco ICC FAR Jun08 FY10.xls*
- *Final Eco LVRC EGL FAR Mar08 FY10.xls*
- *Final Eco SRC FAR Jun09 FY10.xls*
- *Final Eco SRRC FAR Jun09 FY10.xls*

These documents do not provide the rational for selecting asset lives. These supporting documents, in general, align with the information provided within the Authority's templates.

Within its information return Queensland Urban Utilities states:

"Depreciation for regulatory purposes is based on RAB values. Depreciation calculated from the fixed asset registers is used to provide an average remaining life by asset class as at 1 July 2008.

This average life is then used to calculate depreciation on the opening value of the asset class. In addition 50% of each year's 'as-commissioned' capital expenditure ('as-incurred' for 2008/09 and 2009/10) is depreciated at the nominal life assigned to the each asset class. Given the additional flexibility of the QCA data template this year, several asset classes have been assigned different nominal lives between water and sewerage. This allows for increased accuracy in the depreciation profile."

We have compared the provided asset lives to available benchmarks. The Water Services Association of Australia (WSAA), the Pressure Sewerage Code of Australia (WSA 07-2007 V1.1) and the WSAA Water Supply Code of Australia (WSA 03-2002) provide benchmarks for asset lives.

Table 18 presents benchmarks of selected asset lives and a comparison with those used by Queensland Urban Utilities.

- **Table 18 Benchmarking of asset lives**

Asset	Benchmark	Comment
Water and Wastewater Distribution infrastructure	The WSA 07-2007 Pressure Sewerage Code of Australia V1.1 suggests a nominal asset design life of 100 years for pressure sewers and laterals and property discharge lines, 20 -30 years valves. The WSA 03-2002 Water Supply Code of Australia suggests a typical asset design life of 100 years for water mains, 30 years for valves.	A 70 year asset life for water infrastructure and a 65 year assets life for wastewater infrastructure is reasonable
Reservoirs	The WSA 03-2002 Water Supply Code of Australia suggests a typical asset design life of 50 years for reservoirs.	Compared to benchmarks, the assumption of a 90 year asset life appears high, however, from our experience many reservoirs are in service for longer than 50 years.
Treatment	No combined treatment asset life is provided.	Treatment consists of a number of civil, mechanical and electrical assets. A combined asset life of 25 years is reasonable
Pump stations	The WSA 03-2002 Water Supply Code of Australia suggests a typical asset design life of 20 years for pumps (note that this contributes to the mechanical component only).	The assumption of a 25 and 30 year asset life, for water and wastewater pump stations respectively, is reasonable.

Asset	Benchmark	Comment
Telemetry & SCADA	The WSA 03-2002 Water Supply Code of Australia suggests a typical asset design life of 15 years for SCADA.	The assumption of a 10 year asset life is reasonable.

5.7.2. Useful lives for new assets for tax purposes

Information on asset lives for major assets, such as reservoirs, treatment and pump stations have been provided in the Authority's templates. As with the useful lives for new assets the same categories were not completed.

Supporting documentation has been provided documenting the lives of assets for each region within Queensland Urban Utilities, as listed below:

- *Final Eco Tax ICC 1 July 2010.xls*
- *Final Eco Tax LVRC 1 July 2010.xls*
- *Final Eco Tax SRC 1 July 2010.xls*
- *Final Eco Tax SRRC 1 July 2010.xls*

These documents do not provide the rational for selecting asset lives. These supporting documents, in general, align with the information provided within the Authority's templates.

Within its Return Queensland Urban Utilities states:

> *"Opening tax values from the financial accounts were used for regulatory purposes. The average tax lives of assets as at 1 July 2008 were estimated using depreciation as for regulatory depreciation. Nominal tax lives were assigned to assets based on the Australian Master Tax Guide, 2011. Where multiple lives apply to an asset class, such as pump stations, the Brisbane asset register was used to calculate an average for the asset class."*

The TR 2011/2 Taxation Ruling Income tax: effective life of depreciating assets (applicable from 1 July 2011) discusses the methodology used by the Commissioner of Taxation in making determinations of the effective life of depreciating assets under section 40-100 of the Income Tax Assessment Act 1997 (ITAA 1997). The effective life of a depreciating asset is used to work out the asset's decline in value. (ATO, 2011)

The Commissioner makes a determination of the effective life of a depreciating asset by estimating the period (in years, including fractions of years) it can be used by any entity for a taxable purpose. In the Commissioners' determination, a number of factors are considered including:

- The physical life of the asset
- Engineering information

- The manufacturer's specifications
- The way in which the asset is used by an industry
- The past experience of users of the asset
- The level of repairs and maintenance adopted by users of the asset
- Industry standards
- The use of the asset by different industries
- Retention periods
- Obsolescence
- Scrapping or abandonment practices
- If the asset is leased, the period of the lease
- Economic or financial analysis indicating the period over which that asset is intended for use
- Where the asset is actively traded in a secondary market, conditions in that market

It is important to note that the Commissioner does not consider that the physical life of an asset is necessarily its effective life because, all the factors must be considered before an estimate of effective life is made. A consideration of these factors may often indicate that an asset's effective life is a period shorter than its physical life. (ATO, 2011)

We cross referenced the effective tax lives provided by Queensland Urban Utilities with the 'Effective lives (Industry Categories)' Table A as at 1 July 2011 provided in the TR 2011/2 Taxation Ruling (ATO, 2011).

Table 19 Review of effective life

Asset Class	Description	Effective Life (Tax)*	Revised Effective Life (Tax)+
Water			
Distribution infrastructure	all mains and fittings	80	80
Reservoirs		80	80
Pump stations		30	25
Telemetry/SCADA		10	10
Meters		20	20
Wastewater			
Distribution infrastructure	all mains and fittings	80	80
Pump stations		30	25
Telemetry/SCADA		10	10
Meters		20	20
Treatment plants		30	Comprised of a number of individual assets
Support			
Billing Systems		3	Not covered
Corporate Systems		3	Not covered
Buildings	not housing infrastructure	40	No direct correlation with asset type
Sundry plant & equipment		8	Require further clarification of assets to determine life
Establishment Costs		8	Require further clarification of assets to determine life

*Information provided by the entity; +Determined through review of Australian Government TR2011/2 Taxation Ruling: Income Tax, effective life of depreciating assets (applicable from 1 July 2011)

The Authority template refers to an asset class as opposed to individual assets, ie for treatment plants, sundry plant and equipment and establishment costs, which cannot be cross referenced with TR 2011/2 Taxation Ruling. Without a breakdown of individual asset types within the groups a revised effective tax life cannot be determined.

For the treatment plants asset group the components of an 'average' wastewater treatment plant were selected and assessed to determine the average effective life of the group of assets. The 'average' treatment plant assessed included pre-treatment comprising of sewer mains, pump station, screening and grit removal; secondary treatment comprising of biological nutrient removal assets (aerators and blowers, BNR tanks and mixers) and secondary clarifiers; and tertiary treatment comprising of UV disinfection, aerobic digesters, sludge thickening tanks, belt presses and sludge aerators and blowers. Additional assets incorporated for the overall operation of the plant included valves, chemical dosing pumps, flow meters, telemetry, variable speed drives, chlorine residual analysers, pH meters, dissolved oxygen probes, level sensors, etc. Based on a

simplistic calculation, including one of each asset type, the median effective life is 25 years. This is comparable to the 30 years suggested by Queensland Urban Utilities. It should be noted that this calculation was performed to determine a relative figure. For a more accurate determination the Authority information requirement template would need to be modified to include all asset types, and the quantities, at each treatment plant.

Effective lives for systems such as billing and corporate are not covered by the taxation ruling and therefore cannot be assessed, however as a billing system would largely comprise of computer equipment we believe that a life of three to four years would be reasonable. Buildings do not have any direct correlation with any asset and life included in the TR 2011/2 Taxation Ruling, therefore a revised effective tax life cannot be determined.

The effective asset lives for pump stations, for both water and wastewater, do not correlate to TR 2011/2 Taxation Ruling guidance. It is suggested that these be reviewed by Queensland Urban Utilities when next assessing their effective lives.

It should also be noted that whilst we offer advice based on publicly available information and our interpretation is based on experience, the above should not be interpreted by either the Authority or by Queensland Urban Utilities as tax advice. Therefore, although we can advise that effective lives do not correlate to TR 2011/2 Taxation Ruling guidance; it is recommended that Queensland Urban Utilities seeks guidance from its accountants/auditors regarding estimates of effective asset lives for tax purposes.

5.7.3. Summary

Whilst the assumed asset lives for passive assets such as reservoirs and pipelines is relatively consistent between all entities, there are a number of significant differences between the asset lives for the active assets (e.g. pump stations and treatment plants). This is because these assets comprise of a range of civil, mechanical and electrical assets, all with significantly different asset lives. For example, within the life of a wastewater pump station, the civil assets (building, pump well) are likely to remain relatively unchanged, whilst the pumps and control systems are likely to be replaced several times. The calculation of a combined asset life depends on the relative weighting of the civil, mechanical and electrical assets.

6. Operating Expenditure

6.1. Overview of operating expenditure

Queensland Urban Utilities has included historical operating expenditure values for the 2008/09 financial year and the 2009/10 financial year in its submission to the Authority. For the 2010/11 financial year the operating expenditure values are budget figures. The values returned beyond this period are for forecast figures. This approach is consistent with the 2010/11 Information Return.

As the entity was formed in mid-2010 the figures prior to the 2010/11 financial year are from each participating council and so are only given for information.

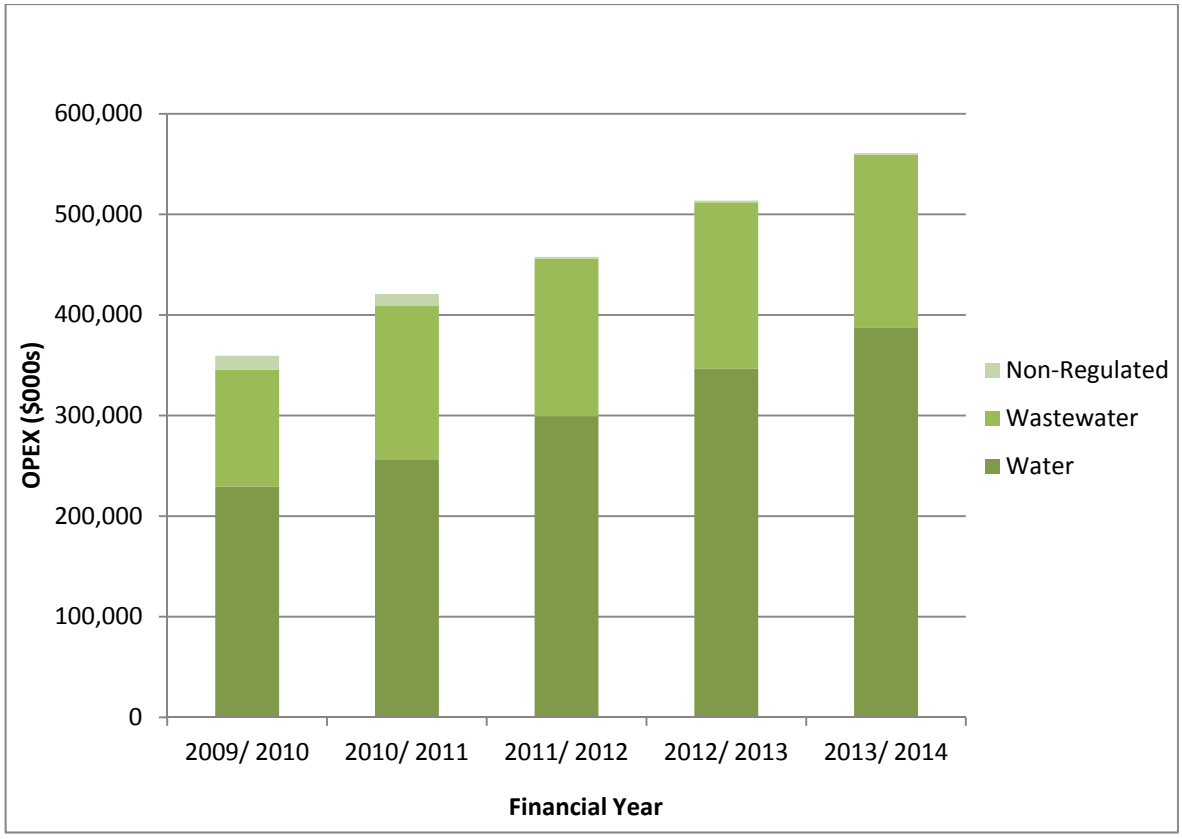
The following table provides a breakdown of the operating expenditure for the price monitoring period (financial years 2011/12, 2012/13, 2013/14). Over this period Queensland Urban Utilities predicts an increase in the operating expenditure of $103 million as can be determined from the figures in the table below.

Table 20 Queensland Urban Utilities – operating expenditure

Service	2011/12 Financial Year ($000s)	2012/13 Financial Year ($000s)	2013/14 Financial Year ($000s)
Water	299,455	346,869	387,642
Wastewater	156,674	165,111	171,657
Non-regulated	1,613	1,687	1,755
Total	**457,741**	**513,666**	**561,054**

Source: 2011/12 Information Template

The following graph indicates the operating expenditure as detailed by Queensland Urban Utilities in their return to the Authority. The main points to be drawn from the graph of annual operating expenditure from the 2010/11 financial year to the 2013/14 financial year are that across the period the water services operating expenditure increases by 52 percent; the wastewater services operating expenditure increases by 12 percent and the non-regulated operating expenditure decreases by 85 percent. Over the same period, Queensland Urban Utilities predicts that expenditure on bulk water (driven by both demand and unit price increase from the bulk water supplier) will increase 62 percent. Employee expenses are also shown to increase by 13 percent. Queensland Urban Utilities has advised that the majority of change in value allocated to ‘employee expenses’ represents an improved disaggregation of employee costs. These figures are generally consistent with other water distribution and retail entities in SEQ.

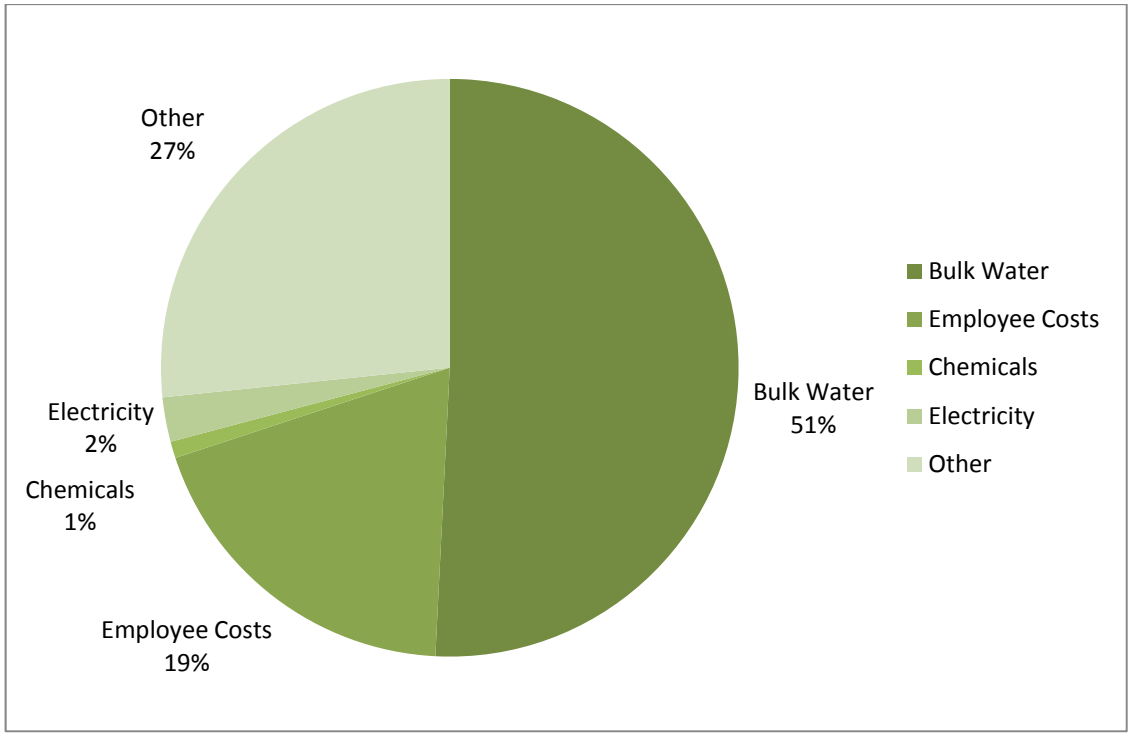


Source: 2011/12 Information Template

- **Figure 4 Queensland Urban Utilities – operating expenditure**

Queensland Urban Utilities has an operating expenditure budget of $1,532 million for the price monitoring period (financial years 2011/12, 2012/13, 2013/14).

The following figure indicates the breakdown of the operating expenditure budget in terms of the main cost categories. As can be seen from the chart, the cost of purchasing bulk water is the main operating expenditure item. Corporate costs are aggregated with the other cost categories.



Source: 2011/12 Information Template

- **Figure 5 Queensland Urban Utilities – combined main cost categories for financial years 2011/12, 2012/13, 2013/14**

The following tables contain the cost breakdown of the different services, namely water, wastewater and non-regulatory services.

Table 21 Queensland Urban Utilities – operating expenditure for water (FY12-14)

Item	2011/12 Financial Year ($000s)	2012/13 Financial Year ($000s)	2013/14 Financial Year ($000s)
Bulk water	219,049	257,147	296,630
Employee expenses	34,679	36,353	37,917
Contractor expenses	942	992	1,039
GSL payments	-	-	-
Electricity charges	1,063	1,148	1,240
Sludge handling	-	-	-
Chemical costs	162	169	178
Other materials and services	43,145	50,631	50,200
Licence or regulatory fees	414	428	439
Corporate costs	-	-	-
Non recurrent costs	-	-	-
Indirect taxes	-	-	-
Total	**299,455**	**346,869**	**387,642**

Source: 2011/12 Information Template

Table 22 Queensland Urban Utilities – operating expenditure for wastewater (FY12-14)

Item	2011/12 Financial Year ($000s)	2012/13 Financial Year ($000s)	2013/14 Financial Year ($000s)
Bulk water	0	2611	3,027
Employee expenses	57,478	60,290	62,920
Contractor expenses	877	924	967
GSL payments	-	-	-
Electricity charges	10,683	11,564	12,518
Sludge handling costs	8,941	9,362	9,828
Chemical costs	4,352	4,554	4,778
Other materials and services	73,704	75,146	76,940
Licence or regulatory fees	639	660	679
Corporate costs	-	-	-
Non recurrent costs	-	-	-
Indirect taxes	-	-	-
Total	**156,674**	**165,111**	**171,657**

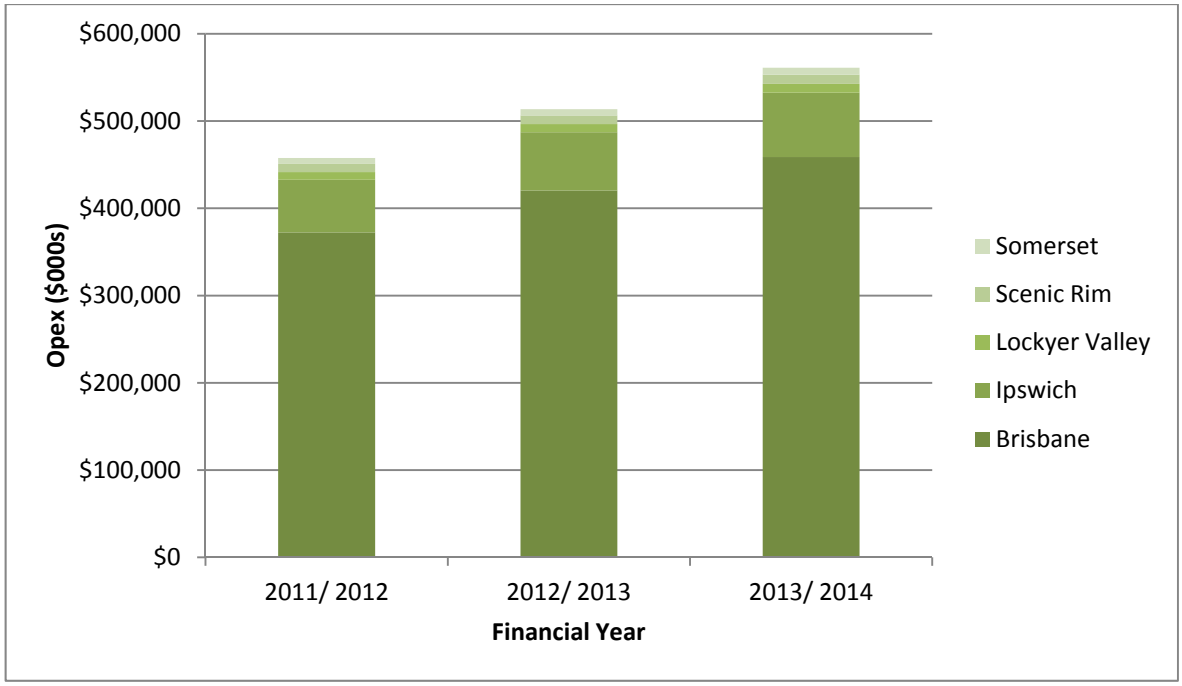
Source: 2011/12 Information Template

- **Table 23 Queensland Urban Utilities – operating expenditure for non-regulated (FY12-14)**

Item	2011/12 Financial Year ($000s)	2012/13 Financial Year ($000s)	2013/14 Financial Year ($000s)
Bulk water	-	-	-
Employee expenses	1,198	1,255	1,308
Contractor expenses	-	-	-
GSL payments	-	-	-
Electricity charges	-	-	-
Sludge handling costs	-	-	-
Chemical costs	-	-	-
Other materials and services	414	431	447
Licence or regulatory fees	-	-	-
Corporate costs	-	-	-
Non recurrent costs	-	-	-
Indirect taxes	-	-	-
Total	**1,613**	**1,687**	**1,755**

Source: 2011/12 Information Template

The following chart indicates the makeup of operating expenditure for each region in Queensland Urban Utilities for the price monitoring period (financial years 2011/12, 2012/13, 2013/14). As the graph indicates Brisbane is by far the largest region in terms of operating expenditure and is about 82 percent of the total operating expenditure over the period.

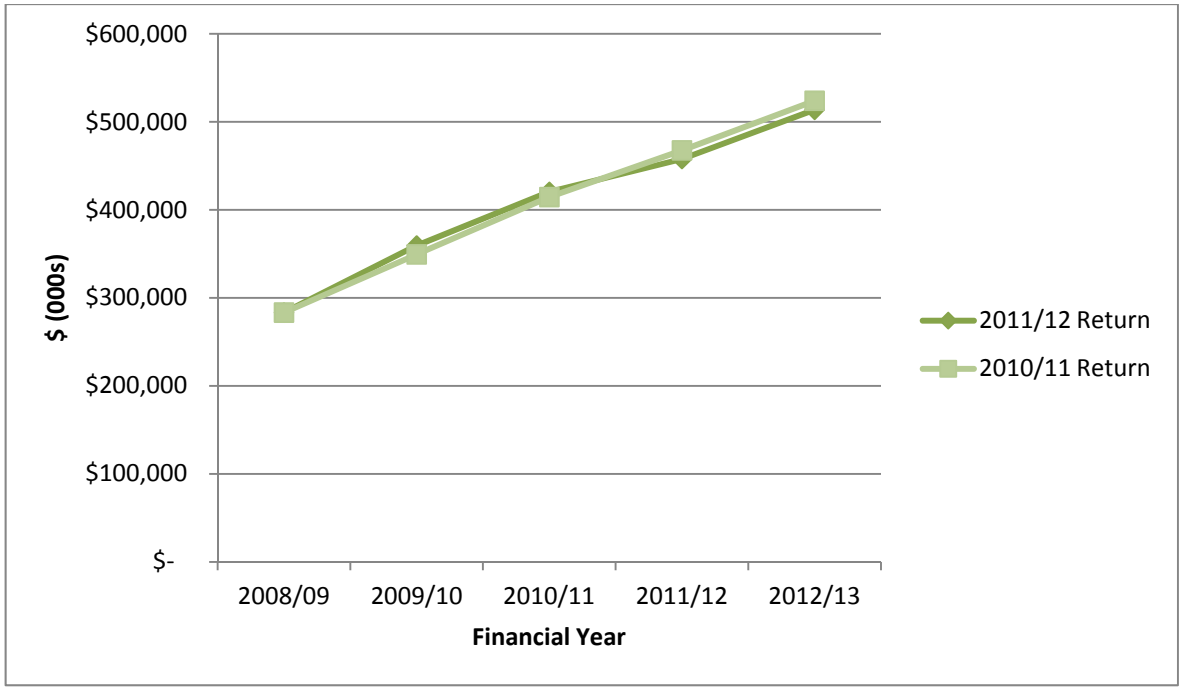


Source: 2011/12 Information Template

- **Figure 6 Queensland Urban Utilities – operating expenditure for FY12-14 per region**

6.2. Historical costs and variances

A comparison is made between the forecast operating costs submitted by Queensland Urban Utilities in the 2010/11 Information Template and the 2011/12 Information Template in the figure below. A moderate reduction in forecast operating expenditure as compared to the 2010/11 Information Template is noted.



Source: 2010/11 Information Template, 2011/12 Information Template

- **Figure 7 Comparison of forecasts – 2010/11 Submission and 2011/12 Submission ($000s)**

The variation between the 2010/11 and 2011/12 forecast operating expenditures are outlined below, **Table 24**.

- **Table 24 Comparison of forecasts – 2010/11 and 2011/12 Submissions ($000s)**

Source	2008-09	2009-10	2010-11	2011-12	2012-13
Total operating expenditure					
2010/12 Information Template	283,240	349,261	414,455	467,533	523,865
2011/12 Information template	283,240	359,389	420,825	457,741	513,666
Variance	0	10,128	6,370	-9,792	-10,199
Operating expenditure – excluding bulk water costs					
2010/12 Information Template	176,660	200,903	224,779	235,550	246,076
2011/12 Information template	176,660	209,269	238,034	238,692	253,909
Variance	0	8,366	13,255	3,142	7,833

Source: 2010/11 Information Template, 2011/12 Information Template

The table and figure above show an increase of $6.4 M in total operating costs for the 10/11 financial year, and a forecast reduction from last year's estimates of $9.8 million and $10.2 million in 2011/12 and 2012/13 respectively, in its 2010/11 Information Template. Expenditure on bulk water is not a cost that is controllable by Queensland Urban Utilities with volumes driven by consumer demand and growth, and unit prices determined externally. As such, we have also

compared forecast operating costs excluding bulk water expenditure in **Table 24**. The results show that the 2011/12 Information Template forecasts an increase in operating expenditure (less bulk water expenditure) for the interim price monitoring period as compared to the 2010/11 Information Template.

The Authority's Information Requirement specifies that information should be allocated to relevant service types. We have compared the forecast operating expenditure by service type with the 2010/11 information return. This analysis is summarised in **Table 25**.

Table 25 Comparison of forecasts by service type – 2010/11 and 2011/12 Submissions ($000)

	2011/12 FY		2012/13 FY		2013/14 FY	
Service	2010-11 return	2011-12 return	2010-11 return	2011-12 return	2010-11 return #	2011-12 return
Drinking water	309,724	299,455	359,127	346,869	-	387,642
Other core water services	0	0	0	0	-	0
Wastewater via sewer	146,438	134,798	152,926	141,863	-	147,519
Trade waste	0	21,876	0	23,248	-	24,138
Other core wastewater services	0	0	0	0	-	0
Non-Regulated	11,371	1,608	11,813	1,682	-	1,750
Total	**467,533**	**457,736**	**523,865**	**513,661**	**-**	**561,049**

Operating expenditure was not required to be forecast for 2013/14 in the 2010/11 Information Return.

Source: 2010/11 Information Template, 2011/12 Information Template

The above table illustrates the major variance in operating costs between the 2011/12 Information Template and the 2010/11 Information Template is within the Drinking Water service, where forecasts have reduced by 3.3 percent and 3.4 percent for the 2011/12 and 2012/13 financial years respectively.

In the 2010/11 Information Template Queensland Urban Utilities did not proportion wastewater costs between the wastewater via sewer service and trade waste service. Hence, these two categories should be read in conjunction in the above table. The data shows that in the 2011/12 Information template Queensland Urban Utilities has forecast operating costs for wastewater (via sewer and trade waste) to be greater than indicated in the 2010/11 information return.

We compare the forecast operating costs for the 2011/12 financial year as indicated in the 2010/11 and 2011/12 Information Templates in **Figure 8.**

Source: 2010/11 Information Template, 2011/12 Information Template

Figure 8 Comparison of forecasts – 2010/11 Submission and 2011/12 Submission ($000s)

We have further examined that the operating cost categories that show the greatest variance for the drinking water, wastewater via sewer and trade waste services. These are summarised in **Table 26** below.

Table 26 Comparison of 2011/12 operating expenditure forecast by category – 2010/11 and 2011/12 Submissions

Service	Category	Operating expenditure ($'000)		
		2011-12 return	2010-11 return	Variance
Drinking Water	Bulk water costs	219,049.26	230,854.79	-11,805.53
	Employee expenses	34,679.15	13,651.63	21,027.52
	Other materials and services (not relating to capital expenditure)	43,144.91	65,085.29	-21,940.38
Wastewater via sewer	Employee expenses	50,053.42	25,155.07	24,898.35
	Electricity charges	9,152.34	0.00	9,152.34
	Sludge handling costs	7,581.15	0.00	7,581.15
	Chemicals costs	3,642.16	0.00	3,642.16
	Other materials and services (not relating to capital expenditure)	63,074.99	120,021.59	-56,946.60
Trade waste	Employee expenses	7,424.67	0.00	7,424.67
	Electricity charges	1,530.55	0.00	1,530.55
	Sludge handling costs	1,359.66	0.00	1,359.66
	Other materials and services (not relating to capital expenditure)	10,628.61	0.00	10,628.61

Source: 2010/11 Information Template, 2011/12 Information Template

The main causes of variation identified by Queensland Urban Utilities for the 2011/12 forecast include a reduction in bulk water costs. As the unit costs for bulk water have a fixed price path, we conclude that this is due to a reduced forecast in demand.

The variances identified above should be placed into context by considering the maturity of the organisation. Many of the variances reflect Queensland Urban Utilities' increasing ability and focus on disaggregating costs as required by the Authority, and increasing level of internal structures to manage assets (with less reliance on data from contributing Councils).

We consider the variances between the information to be minor – largely underpinned by re-forecast of water demand. Other variances can be explained by a greater ability to disaggregate costs to the level required by the Authority, demonstrated by the relatively small change in overall operating costs.

6.3. Costs in aggregate

Queensland Urban Utilities' 2011/12 Information Submission to the Authority shows an increase in operating expenditure for each financial year of the forecast as is shown in the following table.

Table 27 Queensland Urban Utilities annual operating expenditure

Financial Year	Operating Expenditure ($000s)	Percentage Annual Increase	Percentage Annual Increase in Bulk Water Charge
2009/10	359,389[i]	-	-
2010/11	420,825[i]	17.1%	-
2011/12	457,741[i]	8.8%	12.9%
2012/13	513,666[i]	12.2%	10.8%
2013/14	561,054[i]	9.2%	9.2%

Source: 2011/12 Information Template

The increases are above annual inflation rates, which for the five years preceding 2011 was in the range of 1.8 percent to 4.4 percent. The Queensland Urban Utilities annual increases in operating expenditure broadly follow the annual increase in bulk water charge.

Queensland Urban Utilities has indicated that increases to the following costs are the reasons for the rise in operating expenditure:

- Bulk water charge
- Labour costs
- Electricity costs
- Chemical costs
- Sludge handling costs

A number of metrics are available to assess the aggregate operating costs for Queensland Urban Utilities. In **Table 28** the forecast 2011/12 aggregate operating costs for Queensland Urban Utilities was benchmarked against the other SEQ retail/distribution entities and peers from around Australia.

Table 28 Queensland Urban Utilities aggregate cost metrics

Metric	Description	Queensland Urban Utilities ($)	Other SEQ average ($)	Sydney Water Corporation ($)	Yarra Valley Water ($)
Customers	Total OPEX per connection	882	910	577	579
	Water OPEX per connection	587	565	332	318
	Wastewater OPEX per connection	295	345	245	261
Network size	Total OPEX per km of pipeline	50,131	48,991	45,566	41,611
	Water OPEX per km of pipeline	34,420	29,930	27,983	23,084
	Wastewater OPEX per km of pipeline	15,711	19,061	17,583	18,527
Volume	Total OPEX per ML of drinking water	3,464	4,223	1,949	2,872
	Water OPEX per ML of drinking water	2,389	2,630	1,090	1,531
	Wastewater OPEX per ML of drinking water	1,075	1,593	859	1,341

Source: QUU 2011/12 Information Template, Allconnex 2011/12 Information Template, Unitywater 2011/12 Information Template, NWC National Performance Report 2010/11 (CPI applied)

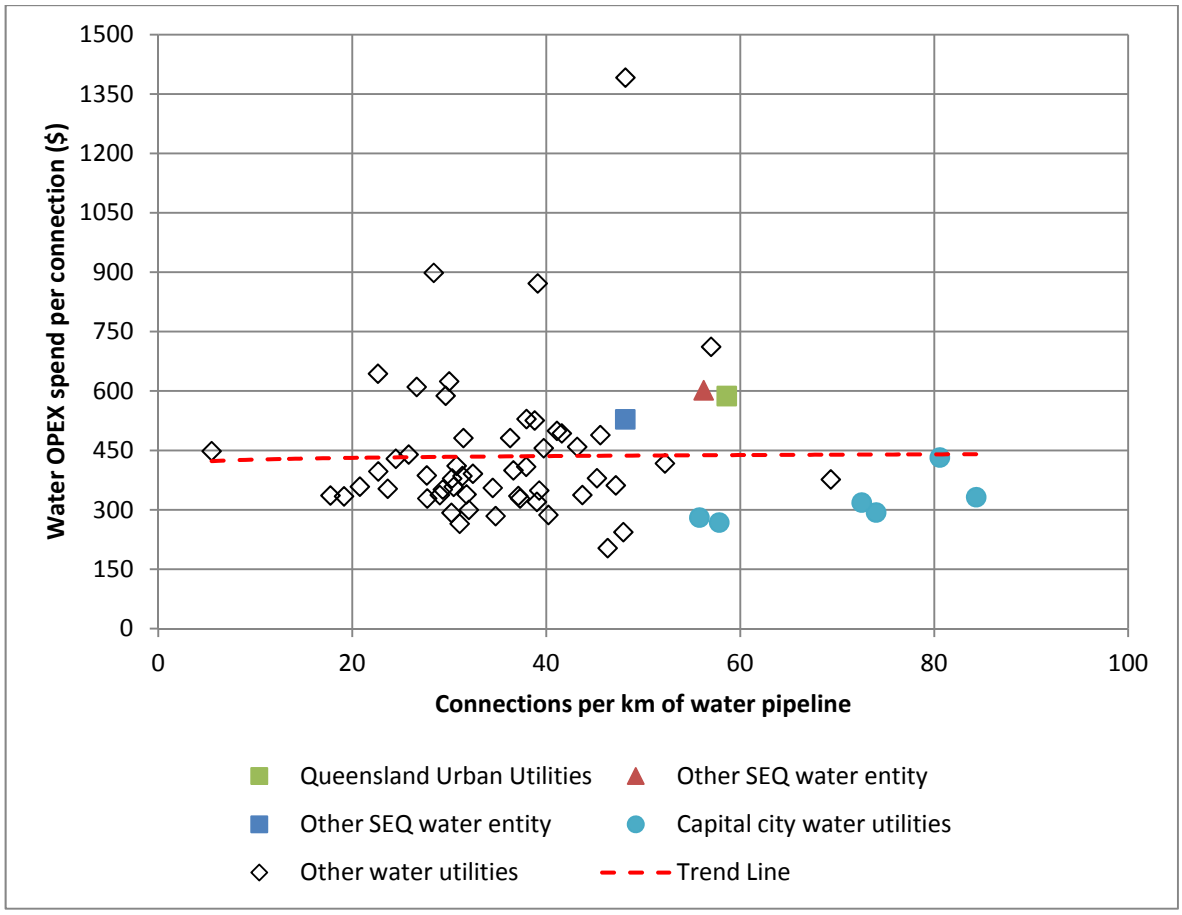
The table shows that Queensland Urban Utilities' operating expenditure for water services is higher than comparable water distributors/retailers in Australia and consistent with other entities in the same region of Queensland. The opposite is true for Queensland Urban Utilities' operating expenditure for wastewater services. These figures are consistent with values for comparable water distributors/retailers in Australia and lower than the average for other entities in the same region of Queensland.

When assessing the aggregate operating costs of water utilities around Australia, comparing expenditure per connection will tend to favour the larger utilities that have a large customer base or some density. Likewise, comparing expenditure with respect to network size will favour utilities with larger networks. In order to show the relative performance of Queensland Urban Utilities' operating expenditure with their peers a two dimensional normalisation was used to develop a cost curve for water and wastewater services.

In **Figure 9** the operating expenditure on water services for a range of Australian water utilities was compared, using data sourced from the National Water Commission National Performance Report 2010/11. A cost escalation index equal to CPI (Weighted average for eight capital cities) was applied to the National Water Commission data to adjust costs to 2010/11 dollars. Water utilities

from other Australian capital cities – which we consider to be industry peers of Queensland Urban Utilities – are highlighted.

Data in the National Water Commission National Performance Report 2009/10 for several water utilities around Australia was used in the comparison. A CPI obtained from the Australian Bureau of Statistics website was used to re-calculate the prices in the National Water Commission National Performance Report 2009/10 to 2011/12 prices. Water utilities from other Australian capital cities have also been highlighted.



Source: QUU 2011/12 Information Template, Allconnex 2011/12 Information Template, Unitywater 2011/12 Information Template, NWC National Performance Report 2010/11 (CPI applied)

Figure 9 Comparison of Queensland Urban Utilities' operating expenditure on water services with other Australian water utilities

The chart shows that Queensland Urban Utilities' water operating costs are generally higher than similar sized water service providers. The chart shows that Queensland Urban Utilities water operating costs are comparable to the other water distributors/retailers in this region of Queensland.

The impact of the bulk water price increases on operating costs is demonstrated by the data contained in the Queensland Urban Utilities 2011/12 Information Template. The bulk water charges are predicted to be 47.9 percent of the total operating expenditure in the 2011/12 financial year, increasing to 52.9 percent of the total operating expenditure in the 2013/14 financial year. There is insufficient industry information publicly available for full benchmarking of water operating expenditure excluding bulk water costs to be undertaken, largely as a result of the different water supply chain models used interstate.

As was demonstrated in last year's review bulk water charges in SEQ are higher than in other parts of Australia and contribute to the relatively high cost of water supply by Queensland Urban Utilities as is demonstrated in the following table.

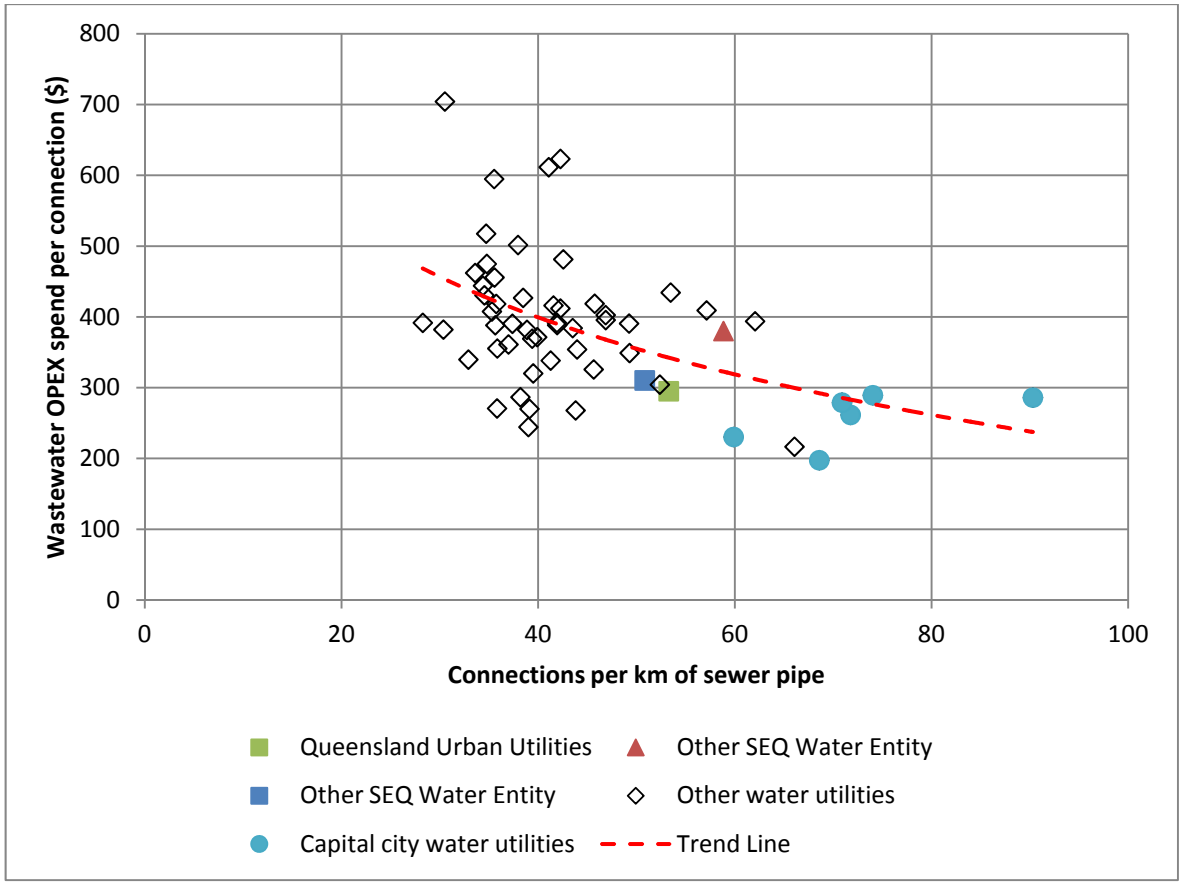
Table 29 compares the bulk water costs of Queensland Urban Utilities against selected peers throughout Australia.

- **Table 29 Comparison of bulk water costs**

Water Utility/area	Bulk water cost ($/kL)	Controllable water operating expenditure (2011/12) ($/connection)
Queensland Urban Utilities	-	587[iii]
Brisbane City	1.81[i]	-
Ipswich City	1.74[i]	-
Lockyer Valley	2.00[i]	-
Scenic Rim Region	2.11[i]	-
Somerset Region	2.38[i]	-
Sydney Water Corporation	0.48[ii]	322[iv]
City West Water	1.32[v]	420[iv]
South East Water	1.33[v]	285[iv]
Yarra Valley Water	1.07[v]	309[iv]

i Figures from Queensland Water Commission table 'Bulk Water Prices 06-12-10'
ii Charge is for raw (untreated) water Source: IPART, Review of charges for Sydney Catchment Authority, 2009
iii Calculated with figures from Queensland Urban Utilities
iv National Water Commission's National Performance Report Part C
v Source: ESC, Metropolitan Melbourne Water Price Review 2009m Schedule 2, CPI applied

Queensland Urban Utilities' wastewater operating expenditure is benchmarked in **Figure 10**. Similar to the operating costs for water, the National Water Commission National Performance Report 2010/11 has been used as a data source for peer organisations; with a cost escalation applied to adjust costs to 2011/12 dollars.



Source: QUU 2011/12 Information Template, Allconnex 2011/12 Information Template, Unitywater 2011/12 Information Template, NWC National Performance Report 2010/11 (CPI applied)

Figure 10 Comparison of Queensland Urban Utilities' operating expenditure on wastewater services with other Australian water utilities

The chart shows that Queensland Urban Utilities wastewater operating costs are generally lower than similar sized water service providers. We note that costs for operating Queensland Urban Utilities recycled water facilities have been captured under the 'wastewater' service type.

We conclude that Queensland Urban Utilities water operating costs are generally higher than similar sized water service providers largely arising from higher bulk water costs but that Queensland Urban Utilities wastewater operating costs are generally lower than similar sized water service providers.

6.4. Sample selection

In undertaking a review of prudency and efficiency of operating expenditure we have selected a sample of costs for detailed investigation. The sample is shown in **Table 30** below.

The selection of our sample is based on the categories that attract the largest portion of operating expenditure and includes both fixed and variable costs. We have, however, excluded Bulk Water costs from our sample. Bulk Water costs are determined by other agencies and are not within the control of Queensland Urban Utilities. Our sample includes 49.5 percent, 48.25 percent and 49.3 percent of the total forecast operating expenditure (less bulk water and non regulated services) for 2011/12, 2012/13 and 2013/14 respectively.

- **Table 30 Operating expenditure sample selection for Queensland Urban Utilities**

Category	Service	Operating Expenditure ($000s)		
		2011/12	2012/13	2013/14
Corporate costs	Drinking water	0	0	0
	Wastewater via sewer	0	0	0
	Trade waste	0	0	0
	Total	**0**	**0**	**0**
Employee costs	Drinking water	34,679.1	36,353.3	37,916.7
	Wastewater via sewer	50,053.4	52,515.3	54,820.3
	Trade waste	7,424.7	7,774.5	8,099.8
	Total	**92,157.2**	**96,643.1**	**100,836.8**
Electricity costs	Drinking water	1,063.5	1,148.4	1,240.1
	Wastewater via sewer	9,152.3	9,910.9	10,733.2
	Trade waste	1,530.5	1,652.7	1,748.7
	Total	**11,746.3**	**12,712.0**	**13,722.0**
Chemical costs	Drinking water	161.8	169.5	177.9
	Wastewater via sewer	3,642.2	3,812.4	4,000.3
	Trade waste	709.7	742.1	777.7
	Total	**4,513.7**	**4,724.0**	**4,955.9**
Sludge handling	Drinking water	0	0	0
	Wastewater via sewer	7,581.2	7,940.9	8,338.1
	Trade waste	1,359.7	1,421.5	1,489.8
	Total	**8,940.9**	**9,362.4**	**9,827.9**
Total Sample		117,358.1	123,441.5	129,342.6
Total operating expenditure, less bulk water and non-regulated services		237,079.2	254,361.6	262,122.9
Percentage		49.5%	48.5%	49.3%

Source: 2011/12 Information Template

6.5. Corporate costs

6.5.1. Overview of operating expenditure

The operating expenditure reviewed in this section is for corporate costs. The Authority's definition for corporate costs (as detailed in the Information Requirements 2011/12) is:

"general corporate expenditure that cannot be readily allocated to other cost types, including such costs associated with:

- *Personnel in the corporate group/division*
- *General management*
- *Board members*
- *Legal counsel*
- *Company secretary*
- *Quality/business improvements*
- *Corporate relations*
- *Strategy and planning*
- *Human resource management*
- *Risk management*
- *Insurance management*
- *Environment management*
- *Property management*
- *Financial management*
- *Support staff for the corporate office*
- *Costs incurred by the corporate office*
- *Membership fees or trade and industry organisations*
- *IT systems other than those costs associated with the SCADA*
- *Price monitoring staff "*

Queensland Urban Utilities has not disaggregated corporate costs within their information return template, as described in their information return:

"Queensland Urban Utilities has separated operating costs into the categories required under the QCA Information Requirements for 2011/12 where they represent a consistent approach. However, as 'Corporate Costs' is not a mutually exclusive cost category this has not been included in the data template"

Instead, these costs have been captured within the other categories (eg employee costs, other materials and services). From our interviews, Queensland Urban Utilities has noted that corporate costs cannot be readily separated due to the structure of its chart of accounts, inherited from the former Brisbane Water business. The following financial information for corporate costs can be provided:

"Corporate costs can be allocated under a separate method that Queensland Urban Utilities uses to report cost both internally and within the QCA data template. These costs are closely aligned to the QCA definition of Corporate Costs with the following exceptions:

- *It excludes environmental management costs (these are held within an operations responsibility code)*
- *It includes accounts payable for sundry charges"*

We have used the above Queensland Urban Utilities corporate cost data in the absence of costs that are fully consistent with the Authority's definition. Inclusions and exclusions have been acknowledged whilst undertaking benchmarking.

6.5.2. Provided documentation

The following documentation has been provided by Queensland Urban Utilities for this review:

- *Queensland Urban Utilities Information Return 2011/12*, Queensland Urban Utilities, August 2011
- *Response to RFI 0002*
- *Breakdown of Corporate Costs for 2010/11 and 2011/12*

6.5.3. Prudency

Corporate cost related activities encompass a core function of Queensland Urban Utilities business activities. Under various acts, regulations and policies, Queensland Urban Utilities is required to undertake various corporate functions including management of reporting and recording of transactions, management of staff and risks, governance and delivery of services.

Queensland Urban Utilities provided to us a breakdown of the corporate costs by financial costs, labour costs, materials and services and plant and equipment. This break down is summarised in **Table 31** below.

- **Table 31 Breakdown of corporate costs by activity**

Cost type	Activity
Financial costs	Audit fees, bank charges, doubtful debts, insurance
Labour costs	Agency staff, annual leave, contract labour, employee incentive schemes, fringe benefit tax, leave in lieu, long service leave, non-accumulating leave, other labour costs, overtime, payroll tax, salaries and wages, sick leave, superannuation, workers compensation
Materials and services	Advertising/promotion, Board fees, cab charges, catering, cleaning, conferences and courses, consultancy fees, courier and freight, entertainment, fuel, human resources, information communication and technology, legal costs, licenses and permits, membership fees, other materials and services, payroll services, periodicals and journals, postage, printing, sourcing and procurement, stationery, transport costs, travel costs
Property plant and equipment	Plant and equipment maintenance, buildings maintenance, plant and equipment hire, plant and equipment purchases, photocopy costs, rent, software purchases, vehicle hire

From our examination of this list we conclude that the items included are all reasonable for Queensland Urban Utilities to complete corporate functions for a water authority and to meet its legal obligations. We therefore consider this expenditure to be prudent.

6.5.4. Efficiency

Calculation of costs

Queensland Urban Utilities provided the following breakdown of corporate costs (**Table 32**).

- **Table 32 Breakdown of Queensland Urban Utilities corporate costs for 2010/11 and 2011/12**

Description	Corporate costs ($000s)	
	2010/11	2011/12
Office of CEO	7,504	3,890
Workforce capability	4,367	7,102
Corporate services	15,360	17,584
Finance	7,451	10,535
ICT	5,725	8,780
Office of Chief operating officer	952	780
Office of GM Marketing and communication	1,153	2,478
Marketing and communication – East	585	861
Marketing and communication - West	672	1
Total	**43,768**	**52,012**

The following initiatives (non-recurring expenditure items) totalling $10,010,000 is included in the above budget for 2011/12:

- Safety policies and management systems - $840,000
- Accommodation relocation projects - $95,000
- QCA pricing proposal $3,000,000
- ICT investment program $6,000,000
- Improved customer communications $75,000

The provided data shows an overall increase of 18.8 percent in corporate costs in 2011/12 from the previous year.

Delivery of Service

Corporate services are delivered by a combination of in-house employees and contracted services. Employee costs (including salary, wages and on-costs) total $28,826,680, or 55 percent of the total corporate costs for 2011/12.

A number of corporate services are delivered by Transitional Service Agreements (TSA) with Queensland Urban Utilities shareholding councils. For Ipswich, Lockyer Valley, Scenic Rim and Somerset these primarily relate to local customer counter and telecommunication services. Brisbane Council provides the majority of Queensland Urban Utilities TSA services.

- **Table 33 Related party corporate costs**

Related Party	Services
Brisbane City Council	Information and communication technology services, payroll processing, customer service delivery including contact centre and front counter services, insurance and claims cover management, strategic procurement, building maintenance services, legal services, ethical standards and internal audit, property services
Ipswich City Council	Voice services (telecommunications)
Lockyer Valley Regional Council	Voice services (telecommunications), front counter receipting services
Scenic Rim Regional Council	Voice services (telecommunications), front counter receipting services
Somerset Regional Council	Front counter receipting services

TSAs are due to expire in 2013.

Consultancies and contract labour have been allowed for where:

- Insufficient expertise is available in house (and it is not reasonable to maintain in-house)
- There are peaks in workload
- There is a requirement to seek independent third party advice or review

An example of consultancies is financial auditing.

In undertaking our assessment we recognise that Queensland Urban Utilities is in the early stage of operations. As a result of the amalgamations a number of corporate systems, such as finance, ICT, payroll, customer service and insurance, were required to be available from commencement. These systems are currently provided through the TSA from participating councils and as such, the cost of providing these services have not been fully market tested.

Nonetheless we have accepted these conditions as a constraint, and it would be unreasonable to expect an organisation of the size of Queensland Urban Utilities to have gone to market for the provision of these services within the time it has been in operation.

Market Conditions

When undertaking our assessment of corporate cost we have been cognisant of the following factors:

- Workforce Framework Agreement
- Maturity of the organisation

The Retail Water Reform Workforce Framework 2009 mandates that employment and associated conditions for staff transitioning from the former council water businesses must be maintained. A core concept of this framework is ‘no forced redundancies’ for a three year period from the amalgamation date. Hence, the employee costs under this category are not directly comparable with other utilities.

Secondly, Queensland Urban Utilities has been in operation for a little over one year. There are a number of activities required to integrate the business and transition from council organisations through to an independently regulated utility. Our examination of the initiatives (non-recurring costs) confirms that many of these focus on business integration and transition.

Benchmarking

In **Table 34** we benchmark total 2011/12 corporate costs for Queensland Urban Utilities with the other SEQ water retail/distribution entities, and a selection of urban water authorities in Victoria and New South Wales. We have benchmarked against total number of full time equivalents (FTEs) within the organisation, customer base (we have used number of water connections as a proxy) and maximum allowable revenue (MAR).

- **Table 34 Benchmarking of corporate costs**

Water Authority	Corporate cost benchmarking		
	$/FTE	$/customer connection	$/revenue
Queensland Urban Utilities	**41.9**	**100.4**	**64.8**
Other SEQ retail/distribution entity	37.5	80.9	37.9
Other SEQ retail/distribution entity	34.3	107.3	72.2
Victorian water retail/distributor	106.9	78.5	75.1
Victorian water retail/distributor	87.3	61.0	76.6
Victorian water retail/distributor	63.1	34.1	42.1
NSW water retail/distributor	67.7	114.6	94.9
NSW water retail/distributor	65.6	132.0	135.6
Mean	63.0	88.6	74.9
25th percentile	40.8	74.1	59.1
75th percentile	72.6	109.1	81.2

The results of the benchmarking show Queensland Urban Utilities corporate cost per FTE are significantly lower than peer organisations nationally. We note that the other SEQ retail/distribution entities are also lower than national peers and conclude that this may be in part due to the Workforce Framework creating a labour constraint.

When benchmarked against the customer base, Queensland Urban Utilities forecast corporate costs are seen to be higher than the mean of other water utilities used in the comparison, but still within a range that can be considered reasonable.

When benchmarked against revenue, Queensland Urban Utilities forecast corporate costs are less than the mean of other water utilities used in this comparison.

Insufficient information is available to benchmark each of the services captured under corporate costs (eg Business Strategy and Planning, Office of CEO, Board, Finance, Economic Regulation, Legal, ICT).

We conclude that the Queensland Urban Utilities overall operating costs are comparable with other water authorities in Australia.

6.5.5. Summary

We conclude that operating expenditure for corporate costs is prudent.

We conclude that operating expenditure for corporate costs is efficient.

We recommend that Queensland Urban Utilities prioritises putting in place appropriate systems to capture corporate cost information that is fully compliant with the Authority's definitions for future price submissions.

6.6. Employee expenses

6.6.1. Overview of operating expenditure

The labour cost budget for this item includes all staff Queensland Urban Utilities employs in the operation of its water supply, waste water treatment business and corporate offices.

In its 2011/12 Information Template submitted to the Authority, Queensland Urban Utilities has budgeted $92,157 M in 2011/12 financial year increasing to $100,837 M in 2013/14 financial year for employee expenses excluding employee expenses relating to non-regulated activities.

Table 35 shows the proposed cost of the Queensland Urban Utilities regulated activities employee expenses, within the entity's budget for the next three financial years commencing 2011/12.

- **Table 35 Queensland Urban Utilities – proposed operating expenditure profile**

		Costs ($000s)		
Cost	**Source**	**2011-12**	**2012-13**	**2013-14**
Employee costs for Water and Wastewater Services	2011/12 Information Template	92,157.2	96,643.1	100,836.8

6.6.2. Provided documentation

The key reference documents used for this review are:

- Queensland Urban Utilities' submission to the Authority
- Responses to SKM's requests for information
  - *RFI-0002 – Operating expenditure review – sample review list*
  - *RFI-0010 – Operating expenditure – general opex costs*
  - *RFI-0012 – Operating expenditure – employee costs*

6.6.3. Prudency

The expenditure on employee costs is used to meet the following driver categories:

- Legal obligations
- Operations and maintenance of existing infrastructure

Queensland Urban Utilities is required to supply drinking water and treat wastewater to meet license conditions for public health and environmental discharge limitations. The engagement of

labour to operate and maintain the infrastructure under the responsibility of Queensland Urban Utilities is required to fulfil its obligations and hence, is prudent.

6.6.4. Efficiency

Calculation of costs

Labour costs are developed bottom up on an employee by employee basis. A base salary is calculated for each employee, statutory on-costs are then applied and an allowance is made for overtime based on historical trends. Labour costs are escalated consistent with Queensland Urban Utilities' Enterprise Bargaining Agreement 2011 to 2013, which specifies an escalation of 4.25 per cent from 1 July 2012.

There are a total of 865.8 full time equivalents attributable to the provision of water and wastewater services. The total labour costs for water and wastewater services in 2011/12 is $92.16 M, corresponding to an average of $106,442 per full time equivalent, noting that the overall cost estimate includes allowance for overtime. The base salary is 70-75 per cent of total labour costs with superannuation, leave allowances and payroll tax in addition.

Delivery of service

The operation of water and wastewater services is conducted in house by a total of 865.8 full time equivalent personnel. There is insufficient detail provided in Queensland Urban Utilities' 2011/12 Information Submission to the Authority and response to requests for information to split the workforce between water and wastewater operations.

Market conditions

The labour market for the water industry in Australia has experienced an average growth in prices of slightly over four per cent[8] per annum over the last four years. This has influenced the negotiation processes surrounding new enterprise bargaining agreements with annual wage increases being locked into increases between 3.9 per cent and 4.25 percent through the SEQ water industry.

The budget forecasts by Queensland Urban Utilities has set labour prices to increase at 4.6 per cent per annum, allowing for wage increases of 4.25 per cent as per the enterprise bargaining agreement and a further 0.35 percent for wage increases between award bands.

Efficiencies and economies of scale

Queensland Urban Utilities has identified and committed to undertaking the following efficiencies in their 2011/12 budget:

[8] Australian Bureau of Statistics – ABS 6345.0

- Reduction of 30 full time equivalent positions - $2.7 M saving
- Overtime management changes - $0.52 M saving

The above savings, however, are not clearly reflected in the 2011/12 Information Template.

Benchmarking

Queensland Urban Utilities has undertaken high level external benchmarking comparing operations expenses per connection with other water utility companies based on 2008/09 financial year information from the Water Services Association of Australia. Compared to the other two entities, Allconnex Water and Unitywater, Queensland Urban Utilities has a similar percentage breakdown of employee costs versus total operating expenses with it averaging approximately 21 per cent of annual expenditure.

6.6.5. Summary

The engagement of labour to operate and maintain the infrastructure under the responsibility of Queensland Urban Utilities is required to fulfil its obligations and hence, is prudent.

The expenditure for labour in operating and maintaining the infrastructure under the responsibility of Queensland Urban Utilities is efficient. We recognise that the granularity of required data to fully analyse the employee costs for individual water and waste water services in presently unavailable under the current Queensland Urban Utilities systems and that the proposed ICT project will assist in achieving the requirements. The bottom up approach used by Queensland Urban Utilities provides a reasonable and robust method in calculating employee expenditure for future years.

6.7. Electricity costs

6.7.1. Overview of operating expenditure

Queensland Urban Utilities uses electricity for their water and wastewater pumping, wastewater treatment and corporate offices.

In the 2011/12 Information Template, Queensland Urban Utilities has budgeted $11.75M in 2011/12 financial year increasing to $13.76 M in 2013/14 financial year. Electricity is supplied to Queensland Urban Utilities for use at its sites by the following two retailers following an amalgamation of suppliers from previous council contracts:

- Origin Energy supplies electricity to the large contestable sites (>100 MWh consumption per annum)
- QEnergy supplies electricity to the small contestable sites (<100 MWh consumption per annum)

Queensland Urban Utilities has engaged both retailers in supply contracts with terms expiring on 31 December 2013.

Table 36 shows the budget Queensland Urban Utilities electricity costs within the entity's budget for the next three financial years commencing 2011/12.

- **Table 36 Entity – proposed operating expenditure profile**

	Costs ($000s)		
Source	**2011-12**	**2012-13**	**2013-14**
2011/12 Information Template	11,746.3	12,712.0	13,722.0

6.7.2. Provided documentation

The key reference documents used for this review are:

- Queensland Urban Utilities' submission to the Authority
- Electricity models for Brisbane
- Procurement Post Market Report for Supply of Electricity
- Responses to SKM's requests for information

6.7.3. Prudency

The expenditure on electricity is used to meet the following driver categories:

- Legal obligations
- New growth
- Operations and maintenance of existing infrastructure

Queensland Urban Utilities is required to supply drinking water and treat wastewater to meet license conditions for public health and environmental discharge limitations. Electricity provides motive and process energy for the operation of these services.

As the population of SEQ grows, additional water and wastewater services are required to be supplied. Electricity consumption is proportional to the quantity of water supply and wastewater processing and will therefore increase with population growth in the service area.

Electricity is an integral part of the operation and maintenance of the existing infrastructure under the responsibility of Queensland Urban Utilities. All pump stations, process plants and office facilities require electricity to function and operate safely.

The purchase of electricity for the operation of water supply, wastewater treatment plants and office facilities is required to fulfil Queensland Urban Utilities' obligations and hence, is prudent.

6.7.4. Efficiency

Calculation of costs

As a product of the amalgamation process, the budgeting process for Queensland Urban Utilities is split into an eastern service area (Brisbane) and western service area (Ipswich, Lockyer Valley, Scenic Rim and Somerset). For the 2011/12 financial year, the eastern service area electricity costs are budgeted for using a former Brisbane Water model that uses the following inputs:

- Previous year consumption and cost history
- Flow increase forecasts from growth
- Cost escalation calculated via the Benchmark Retail Cost Index (BRCI) and other price projections published by the Authority.

For the western service area a mixture of methods were employed by the previous councils that used a similar framework to the former Brisbane Water model without the comprehensive spreadsheet model. For the 2011/12 financial year budget, total energy expenditure from the previous year was increased based on growth forecasts and escalation of tariff rates using the BRCI.

- **Table 37 Queensland Urban Utilities – electricity cost increase**

2011-12	2012-13	2013-14
9.13%	8.22%	8.23%

Delivery of service

Electricity is provided to Queensland Urban Utilities by two external parties selected via a competitive tender process. In the first half of 2011, Queensland Urban Utilities released a two part tender to the retail electricity market in an effort to amalgamate electricity supply providers for their sites inherited from the various councils. The two parts of the tender were:

- Part A – Supply of electricity to large contestable sites over a 30 month period made up of three pricing periods:
  - Months 1-6 – Pricing for 10 former Ipswich Water sites whose current electricity supply contracts expired on 30 June 2011
  - Months 7-18 – Pricing for all 31 Queensland Urban Utilities large contestable sites
  - Months 19-30 – Pricing for all 31 Queensland Urban Utilities large contestable sites with contract term expiring 31 December 2013

- Part B – Supply of electricity to all Queensland Urban Utilities small contestable sites for a 30 month contract term based on a discount off the gazetted Queensland retail tariffs expiring on 31 December 2013

The tender submissions for the two parts were:

- Part A – Six retailers provided tenders for the supply of electricity
- Part B – four retailers provided tenders for the supply of electricity. Two of the tenders submitted were non-conforming with the requirements and were removed from the tender review process leaving two entities remaining

Through the tender review utilising Queensland Urban Utilities' processes and procedures Origin Energy was selected to supply the large contestable sites and QEnergy was selected to supply the small contestable sites. Both retailers provided the forecast lowest cost option to Queensland Urban Utilities over the 30 month supply period and met the required non-price tender requirements. The procurement processes of Queensland Urban Utilities were audited by an independent third party and no probity issues were identified.

In the 2010/11 Information Return, Queensland Urban Utilities had inherited an electricity supply contract from a previous council were half of the electricity supply was from green energy systems that placed a price premium on the energy. Based on the information provided by Queensland Urban Utilities this legacy contract appears to have expired and has been replaced by the two retailers selected in the tender process without the green energy premium.

Market conditions

For the tender process Queensland Urban Utilities received offers from six retailers for the large contestable sites and from four retailers for the small contestable sites. This gives evidence to the competitive nature of the electricity retail market that suppliers are willing to pursue opportunities to sell electricity to industrial and utility companies. Queensland Urban Utilities' ability to lock in 30 month supply contracts for its sites has enabled it to sterilise the impact of external forces on electricity prices for that period.

Efficiencies and economies of scale

Queensland Urban Utilities has combined its sites into two categories, large and small contestable sites. The large contestable sites provide real time electricity consumption data to the retailer whilst the small contestable sites are either unmetered or have in-situ meters that require physical reading for each billing period to record consumption.

By combining the site supplies to two retailers, Queensland Urban Utilities has sought to benefit from economies of scale in seeking electricity supply contracts. Forecast savings for Queensland Urban Utilities over the 30 month term of the two supply contracts are for $2.45 M for the large

contestable sites and $0.88 M for the small contestable sites. These estimates are based on information contained in the Post Market Report for Supply of Retail Electricity. Based on the information provided to us, and the information available from the Authority's 2010/11 Price Monitoring Review, we have not been able to confirm these savings.

Queensland Urban Utilities has identified potential energy saving initiatives within the wastewater plants. The level of detail in the energy savings is a high level concept based on received information from the entity and will require further investigation by Queensland Urban Utilities to assess required additional capital expenditure required to achieve the forecast estimate electricity cost reduction of $0.8 M per annum.

Benchmarking

The forward market for electricity supply is influenced by a number of variables that impact the price a retailer is willing to offer for future supply. Examples of some of these variables are listed below:

- Recent (to retail offer) spot electricity market volatility
- Policy announcements and decisions – both State and Commonwealth
- Availability of market supply
- Load profile

A review of retailer supply price offers before and after the Commonwealth Government's announcement of a carbon tax in February 2011 showed an average 25 per cent increase in prices following the announcement. Retailers have priced future carbon tax impacts into their offers based on the level of industry compensation and average market carbon intensity.

In the retail electricity supply market, customers are price takers and have limited ability to influence the price offered by retailers. Comparing the tenders received by Queensland Urban Utilities for the supply of electricity, the spread of peak and off peak prices for the large contestable sites was within ± four per cent of the average price for the 30 month period. This close grouping of prices further demonstrates the competitive nature of the retail electricity supply market.

It is difficult to provide a direct comparison between entities as electricity consumption is a function of:

- Population demand habits
- Local topography and water and wastewater piping hydraulic characteristics
- Number of pumping stations

A possible alternative method for benchmarking entities in terms of assessing energy efficiency could be by reviewing energy consumption in wastewater treatment operations. However the data provided is not disaggregated in sufficient detail to undertake the assessment and results could be distorted by inclement weather influencing regional wastewater flows.

6.7.5. Summary

The purchase of electricity for operation of water supply and wastewater treatment plant is required to fulfil Queensland Urban Utilities' obligations and hence, is prudent.

Purchasing electricity via long term supply contracts for the large and small contestable sites is efficient as the process has sought to secure electricity supply for the lowest cost to the end consumer.

Further work is required to assess the additional capital expenditure requirements in implementing identified energy efficiency opportunities within the wastewater treatment facilities.

6.8. Chemical costs

6.8.1. Overview of chemical Costs

Queensland Urban Utilities operates and maintains Water Reclamation Plants (WRP) and water and wastewater infrastructure networks that use a range of chemicals. The supply of these chemicals is required for the continued operation of key processes. The chemicals listed in Queensland Urban Utilities submission to the Authority include:

- Liquid Oxygen for odour control at Eagle Farm pump station
- Sodium hypochlorite for disinfection and odour control at WRP
- Calcium hypochlorite for WRP disinfection
- Sodium hydroxide (25% and 50%) for pH correction and odour control at WRPs
- Formic acid for cleaning of diffused aeration system at Luggage Point WRP
- Ferric chloride for odour control dosing at Oldfield Road pump station and Oxley Creek WRP
- Aqueous ammonia for use in disinfection process at Luggage Point WRP
- Liquid aluminium sulphate for coagulation dosing at WRP sites
- Magnesium hydroxide for pH control
- Sodium bicarbonate for pH control at WRPs
- Sodium Meta Bi-Sulphite for chlorine removal at Luggage Point WRP
- Antiscalent for prevention of calcium phosphate scaling at Luggage Point WRP
- Hydrochloric acid for acid washing of membranes at Luggage Point WRP
- Sulphuric acid for odour control at Oxley Creek WRP

- Acetic acid for use in micro-filtration at Wynnum WRP
- Activated carbon for removal of organics/odour control
- Polyelectrolytes to aid in dewatering of biosolids

In the 2010/11 Information Template Queensland Urban Utilities allocated budgets of $5,200,000, $5,500,000 and $5,800,000 for the 2010/11, 2011/12 and 2012/13 years, respectively. The actual chemical operational expenditure for the 2010/11 financial year, as described in the 2011/12 Information Template, was $1,400,000 lower at $4,100,000. Of the difference, $607,000 is attributed to reduction in chemical usage. No further information is available on the budgeted and actual chemical expenditure, however the Queensland Urban Utilities 2011/12 Information Return states that 'our chemical and electricity usage is linked to volumes of water and sewage used/treated'. Therefore, we consider it likely that the lower than budgeted consumption of chemicals is linked to the reduction of bulk water treatment due to lower water consumption than budgeted.

Table 38 shows the proposed cost of the Queensland Urban Utilities chemical costs within the entity's budget for the 2011/12 to 2013/14 period.

- **Table 38 Queensland Urban Utilities chemical costs – proposed operating expenditure profile**

	Costs ($000s)		
Source	**2011-12**	**2012-13**	**2013-14**
2011/12 Information Template	4,513.7	4,724.0	4,955.9

Table 39 describes the allocation of chemical costs across the five geographies that make up Queensland Urban Utilities' operating area, and across service types.

- **Table 39 Queensland Urban Utilities Chemical Costs by geographic region and service**

		Costs ($000s)		
Geographical Area	**Service**	**2011/12**	**2012/13**	**2013/14**
Brisbane	Water	138.3	144.6	151.5
	Wastewater (including trade waste)	3931.1	3368.0	4307.5
Ipswich	Water	16.5	17.5	18.6
	Wastewater	203.5	215.6	229.0
Lockyer Valley	Water	2.0	2.1	2.3
	Wastewater	110.6	117.3	124.8
Scenic Rim	Water	5.0	5.2	5.5
	Wastewater	47.6	49.8	52.2

		Costs ($000s)		
Geographical Area	Service	2011/12	2012/13	2013/14
Somerset	Water	0.0	0.0	0.0
	Wastewater	59.1	61.7	64.6

6.8.2. Provided documentation

The key reference documents used for this review are:

- *Post Market Stores Board Submission*, Queensland Urban Utilities, 8 June 2010
- *Post Market Submission, Brisbane City Council*, 28 November 2008
- *Contract WD100083-09/10 Preferred Supplier Arrangement for the Supply and Delivery of Miscellaneous Chemicals and Gases*, 30 June 2010
- *Contract BW.80257-07/08 Panel Contract for the Supply and Deliver of Polyelectrolytes for Water Reclamation*, Brisbane City Council, 8 December 2008
- *Procurement Board Submission (Contract WD100083-09/10)*, Queensland Urban Utilities, 12 November 2009
- Reponses to Requests for Information

6.8.3. Prudency

In the request for information response, Queensland Urban Utilities identifies the drivers for the chemical costs to be:

- Legal obligations
- New growth
- Operations and maintenance of existing infrastructure

Legal obligations include chlorine dosing to meet the Australian Drinking Water Guidelines and dosing of chemicals at WRPs and within the wastewater network to enable compliance with environmental license conditions.

Therefore we conclude that expenditure for chemicals is prudent.

6.8.4. Efficiency

Calculation of costs

Queensland Urban Utilities provided a breakdown of chemical costs for the Ipswich, Lockyer Valley, Scenic Rim and Somerset regions that are based on historical data. Additionally, a process model for chemical consumption was supplied for Wynnum and Luggage Point WRPs as an example of how chemical consumption for the Brisbane area has been determined. In their

response to our request for information Queensland Urban Utilities states that bottom up process models are used to determine quantities and top down historical data is used to verify model outputs.

The process model utilises a bottom up approach to calculation of chemical costs based on fundamental treatment operations at the WRP, and includes information on the monthly unit costs of chemicals and application rates. Our examination of the model shows that unit costs for various chemicals are similar (within 20 percent) of the costs listed in the Post Market Board Submission.

In preparation of the chemical budget for 2011/12, Queensland Urban Utilities adopted a bottom up approach in determining costs. In the response to our request for information Queensland Urban Utilities identifies that in previous years these budgets were developed using an approach that largely relied on rules of thumb and past experience. The 2011/12 budget therefore utilises a more rigorous approach to the forecast of chemicals usage than in previous years. The new model has led to a noticeable reduction in the forecast usage of alum and antiscalant compared to previous years.

The total chemical costs increase by approximately 4.47 percent from 2011/12 to 2012/13 and 4.69 percent from 2012/13 to 2013/14. We have verified that these increases are consistent with the 2.5% cost escalation stipulated in the 2011/12 Information Return and forecast bulk water demand increases that Queensland Urban Utilities has used as a proxy for growth.

Delivery of service

Prior to the formation of Queensland Urban Utilities, Brisbane City Council entered into preferred supplier arrangements with Orica Australia Pty Ltd for the supply of calcium hypochlorite, sodium hydroxide, magnesium hydroxide, sodium meta bisulphite, sulphuric acid, and acetic acid and SNF (Australia) Pty for the supply of polyelectrolyte. The contract with Orica expires on the 14 June 2013 and we understand that this has been novated to Queensland Urban Utilities. The SNF (Australia) Pty Ltd contract for supply of polyelectrolytes expired on the 30th November 2009. There was an option for two 12 month contract extensions in the SNF contract, however no information has been provided as to whether an extension has occurred.

Queensland Urban Utilities undertook a tendering process in December 2009 to establish preferred supplier arrangements for the supply and delivery of chemicals. All tenders were examined by the Core Tender Evaluation Panel and Negotiation Team.

The tendering process resulted in the recommendation that Queensland Urban Utilities enters into preferred supplier arrangements with Coregas Pty Ltd, Activated Carbon Technologies Pty Ltd, GE Infrastructure and Water Process Technologies, Ionics Australasia Pty Ltd, Chemprod Nominees Pty Ltd T/A Omega Chemicals, Orica Australia and Redox Pty Ltd for an initial period of three years. The preferred supplier arrangements outlined in **Table 40** was approved by the Board on 8 June 2011 for a fixed term of three years, with the option to extend for a further additional two

periods of one year, not exceeding a maximum term of five years subject to the satisfactory performance of the suppliers. The preferred supplier arrangement with SNF (Australia) Pty Ltd is for a period of one year from 8th December 2008, with the option to extend for a further additional two periods of one year, not exceeding a maximum term of three years. Given the supporting documentation provided we find that Queensland Urban Utilities has been proactive in endeavouring to source chemicals at the most competitive rate.

- **Table 40 Preferred Suppliers for miscellaneous gases and chemicals**

Preferred Supplier	Chemical
Coregas Pty Ltd	Liquid Oxygen
Activated Carbon Technologies Pty Ltd	Activated Carbon
Elite Chemicals	Sodium Hypochlorite Sodium Hydroxide 25% Aqueous Ammonia 20% Sodium Bicarbonate Sodium Metabisulphite 23%
Omega Chemicals	Liquid Aluminium Sulphate
Orica Australia	Calcium Hypochloride Sodium Hydroxide Magnesium Hydroxide Sodium Metabisulphate 5% Sulphuric Acid Acetic Acid
GE Betz	Antiscalant
Redox Pty Ltd	Ferric Chloride Ferric Chlorite Formic Acid Hydrochloric Acid 33%

In the Post Market Stores Board Submission it is stated that the contract terms selected are intended to provide Queensland Urban Utilities with flexibility, in addition to providing incentive for tenders to supply competitive rates. We agree that the contract terms are sufficient to meet these goals.

We consider that the Queensland Urban Utilities approach to procuring chemicals for its operations and the duration of supply contracts to be appropriate.

Market conditions

Queensland Urban Utilities conducted a desktop analysis to determine the level of interest in the market for chemical suppliers to enter into preferred supplier arrangements as detailed in the Procurement Board Submission dated 12 November 2009. All existing chemical supply contractors indicated willingness to re-tender and several new chemical suppliers expressed interested in tendering.

We understand that the chemical supply market is a small market in SEQ, therefore Queensland Urban Utilities needs to maintain multiple suppliers to keep a competitive environment. Queensland Urban Utilities is achieving this through entering into preferred supplier arrangements with a number of suppliers.

Efficiencies and economies of scale

Economies of scale have been identified through combining Brisbane City Council City Pools and Queensland Urban Utilities requirements for sodium hypochlorite, calcium hypochlorite, sodium bicarbonate and hydrochloric acid 33 percent in the same request for tender.

In preparing the tender documents for the preferred supplier arrangement, Queensland Urban Utilities selected contract terms to encourage prospective suppliers to tender competitively whilst not committing for too long a period to any particular supplier.

We consider that Queensland Urban Utilities are undertaking appropriate steps to realise economies of scale and efficiencies for expenditure on chemicals.

Benchmarking

In **Table 41** we benchmark Queensland Urban Utilities' chemical costs with those of other SEQ water retail/distribution entities. In comparison with the other entities, Queensland Urban Utilities has the lowest unit cost of chemicals for water and wastewater for the 2011/12 to 2013/14 period.

- **Table 41 Benchmarking of chemical costs**

Service	Entity	Chemical Cost ($'000)	Volume/ connections	Chemical Cost per Volume/Connection
Per volume of drinking water demand	Queensland Urban Utilities	$4,514	108,914	$41.45
	Other SEQ retail/distribution entity	$4,549	80,507	$56.50
	Other SEQ retail/distribution entity	$4,859	66,000	$73.62
Per wastewater connection	Queensland Urban Utilities	$4,514	493,383	$9.15
	Other SEQ retail/distribution entity	$4,549	370,591	$12.27
	Other SEQ retail/distribution entity	$4,859	293,493	$16.56

Qualitative factors that may vary across the three entities that should be read in conjunction with the above benchmarking are:

- Consistency of return factor (the ratio of water volume returned to the sewer network to the volume of drinking water consumed).
- Inclusion of recycled water treatment costs and the variety of treatment processes used at wastewater treatment plants

- Network size and requirements for odour control
- Wastewater discharge and other environmental license conditions

We consider therefore that given Queensland Urban Utilities has implemented a competitive tendering process for the supply of chemicals, sought to achieve economies of scale through entering into preferred supplier arrangements and that they achieve the lowest chemical cost per ML of water and per ML of wastewater treated of the SEQ water distribution and retail entities, Queensland Urban Utilities chemical costs are efficient.

6.8.5. Summary

The chemical costs are prudent as there is a demonstrated need for the chemicals in order for Queensland Urban Utilities to operate and provide water and wastewater treatment services.

The chemical costs are efficient as documentation provided indicates that Queensland Urban Utilities has undertaken to obtain preferred suppliers using a tender process that identifies the chemical provider representing the best value for money and benchmarking Queensland Urban Utilities chemical costs against the two other water distribution entities in SEQ demonstrates that they have the lowest chemical costs per ML of water and wastewater treated.

6.9. Sludge handling

6.9.1. Overview of operating expenditure

The operating expenditure item reviewed in this section is ‘sludge handling’. This includes the disposal of bio-solids, grit and screenings from wastewater treatment plants.

The documentation provided by Queensland Urban Utilities indicates that Brisbane City Council, in April 2007, entered into an alliance with Thiess Services – Australian Native Landscapes Joint Venture for the beneficial re-use of waste streams via a compost and soil manufacturing business. The basis for the project was a cost avoidance model where the council could offset existing and future costs for sludge. Additionally the *Significant Procurement Activity Plan* states:

> *“(t)he Thiess Services – Australian Joint Venture was selected as the preferred proponent in April 2007 and Council was working with this proponent in an alliance framework to develop a business case for the project based on a cost avoidance model whereby Council could offset existing and future costs for sludge and generate revenue and profit from the commercial sale of compost/soil products which Council could also use for its own use.”*

Prior to this alliance Thiess Services had been collecting, transporting and disposing of sewage sludge, grit and screenings from wastewater treatment plants for Brisbane City Council since February 1998.

The bio-solids, grit and screenings disposal services are provided by three external companies that were originally employed by Brisbane City Council in April 2009. The following points provide a summary of the contracts.

- Veolia Environmental Services Pty Ltd was awarded the Category 1 services for the disposal of grit and screenings from the wastewater treatment plants and the Category 4 services for the cyclic cleaning waste removal from sewerage infrastructure (excluding jet rodders)
- Hando's Tanker Hire was awarded the Category 2 services for the transportation of liquid sludge from the Fairfield and Karana Downs Water Reclamation Plants
- Thiess Services Pty Ltd was awarded the Category 3 services for the transportation of de-watered bio-solids from the wastewater treatment plants

In its response to our requests for information Queensland United Utilities provided details of the novation of the three contracts from Brisbane City Council to Queensland Urban Utilities.

Table 42 shows the proposed costs of the sludge handling operating expenditure within the entity's budget for the next three financial years.

- **Table 42 Sludge Handling – Proposed operating expenditure profile**

	Costs ($000s)		
Source	**2011-12**	**2012-13**	**2013-14**
2011/12 Information Template	8,940.9	9,362.4	9,827.9

Sludge handling rates were not detailed in 2010/11 Information Return; as such a direct comparison of costs has not been made. For last year's submission these costs were captured under 'other materials and services'.

The Assumed Annual Cost Indexation Factors (Budget and Forecast) that have been applied are as follows:

- 2011/12 financial year = 4.00%
- 2012/13 financial year = 2.75%
- 2013/14 financial year = 3.00%

The 2011/12 Information Return states that the annual growth rates are based on bulk water volumes.

6.9.2. Provided documentation

The key reference documents used for this review are:

- *Queensland Urban Utilities Information Return 2011/12*, Queensland Urban Utilities, August 2011
- *185/210/179/5 Submission to the Establishment and Co-Ordination Committee: Stores Board Submission – Significant Procurement Plan (SPAP) in relation to the Beneficial Re-use of Bio-solids from the Water Reclamation Plants Project*, Brisbane City Council, 6 May 2009
- *Significant Procurement Activity Plan*, Brisbane City Council, 22 April 2009
- *Contract WD.90484-09/10 Provision of Beneficial Re-use of Bio-solids from the Water Reclamation Plants (Category 2: The Transportation of Liquid Sludge from the Fairfield and Karana Downs Water Reclamation Plants)*, Brisbane City Council/Triple H Pty Ltd, 23 December 2009
- *Contract WD.90484-08/09 Provision of Beneficial Re-use of Bio-solids from the Water Reclamation Plants (Category 3: The Transportation of Dewatered Bio-solids and Beneficial Re-use of Bio-solids from the Water Reclamation Plants)*, Brisbane City Council/Theiss Services Pty Ltd, 23 December 2009
- *Contract WD.90484-08/09 Provision of Beneficial Re-use of Bio-solids from the Water Reclamation Plants (Category 1: Disposal of Grit and Screenings from the Water Reclamation Plants. Category 4: Cyclic Cleaning Waste Removal from Sewerage Infrastructure (ex Jet Rodders))*, Brisbane City Council/Veolia Environmental Services, 23 December 2009
- *RFI 0002-QUUR01*, QUU hereafter called the *Response to RFI0002 -QUUR01*
- *RFI 0002-QUUR02*, QUU hereafter called the *Response to RFI002 -QUUR02*
- *RFI 0014-QUUR01*, QUU hereafter called the *Response to RFI014 -QUUR01*
- *Deed of Variation Between TSA JV ABN 39 853 489 877 And Queensland Urban Utilities ABN 86 673 835 011*, Queensland Urban Utilities, 2010
- *Deed of Variation Between Hando's Tanker Hire ABN 84056596975 And Queensland Urban Utilities ABN 86 673 835 011*, Queensland Urban Utilities, 22 June 2010
- *Deed of Variation Between Veolia Water Services ABN 20 051 316 584 And Queensland Urban Utilities ABN 86 673 835 011*, Queensland Urban Utilities, 2011
- *Proposal for the Disposal Services Relating to Regulated Waste from the Queensland Urban Utilities Ipswich Area Water Reclamation Plant*, Veolia Environmental Services, 8 October 2010

6.9.3. Prudency

Queensland Urban Utilities has advised that expenditure meets the following driver categories:

- Legal obligations
- New growth
- Operations and maintenance of existing infrastructure

The *Water Act (2000)* requires water and sewerage service providers to prepare a Total Management Plant (TMP) and a Strategic Asset Management Plan (SAMP). The Bio-solids Management Sub-Plan is a component of the combined TMP and SAMP. The *Significant Procurement Activity Plan* document states that "*sludge, grit and screenings are classified as 'regulated waste' under the Environmental Protection Act (1994) (EPA). The management of bio-solids must meet the requirements of the Environmental Protection (Waste Management Plant) Regulation (2000). Bio-solids must be disposed of using a regulated waste tracking system to EPA licensed sites or beneficial re-use sites. Landfill sites are no longer encouraged by the EPA.*" The document additionally details that all works must comply with the Public Health Act (2005).

In terms of growth its response to our request for information, Queensland Urban Utilities states that the 'sludge handling factors are based on the assumed growth in bulk water volumes' that are referenced in the 2011/12 Information Return. This is an appropriate assumption to make in order to predict future sludge production volumes for the year.

Furthermore Queensland Urban Utilities states that the annual cost indexation factors are also detailed in the document and provides the following explanation:

> *"The 4% rate shown for 2011/12 reflects an allowance for the rise and fall provisions contained within the contract (fuel and transport indices). The index for subsequent years reflects the Reserve Bank of Australia's consumer price index (CPI) forecast over the year to the June quarter."*

Again this assumption is considered to be appropriate.

As the bio-solids, grit and screenings are generated from the operation of wastewater treatment plants, the costs associated with disposal of them are considered as prudent.

6.9.4. Efficiency

Calculation of costs

The expenditure is recurrent as it is due to the ongoing operation of Queensland Urban Utilities wastewater treatment plants. The high level breakdown of the sludge handling operating expenditure is detailed in Queensland Urban Utilities response to our requests for information as:

"Bottom up process models are used to determine quantities and top down historical data is used to verify model outputs. Key factors include:

- *Base volume (historic/sludge production models)*
- *Intra site transport (mostly from area treatment plants to new, high tech site at Oxley Creek – currently unavailable following flooding)*
- *Transport (per tonne basis) – third party supply contract, varies from site to site*
- *Disposal – fixed cost third party contract"*

It should be noted that sludge is transported to Oxley Creek to undergo the Cambi process for anaerobic sludge digestion. This process stabilises the sludge for beneficial reuse and to produce a more de-watered sludge and hence reduce transportation costs. We consider the use of a bottom up approach to determine sludge production rates for the former Brisbane City Council sites to be good practice.

In discussions with Queensland Urban Utilities it has been confirmed that for the former Brisbane City Council sites sludge production models were verified against historic data. We consider this is a reasonable approach to take.

The sludge production volumes from the other Queensland Urban Utilities' sites are estimated using historical volumes. We consider this to be an appropriate method for the western areas, based on the current maturity of the business, information available and the time and resources that would be required to develop zero based sludge production models for small treatment plants.

Delivery of service

The services are delivered by three external parties as is shown in the three contracts that have been provided for our review. The contracts were originally awarded by Brisbane City Council in April 2009 for a maximum duration of five years, which was one of the options recommended in the *Significant Procurement Activity Plan.*

The three companies that were issued the Brisbane City Council contracts have Deed of Variation contracts issued to them to extend the services to the whole of Queensland Urban Utilities' service area.

Market conditions

The *Significant Procurement Activity Plan* document produced by Brisbane City Council details that the market has changed considerably since 1998 when there was a total of 25 tenders for the contract commencing in 1998 for the disposal of sludge, grit and screenings. This change is due to consolidation of 19 companies into one organisation. However the document states that 'the industry is still competitive with a large number of suppliers likely to tender.' The information

return spreadsheet states that the original contracts were awarded by Brisbane City Council following an open tender process, which is appropriate.

It should be noted that grit and screenings handling is a fairly competitive market however, there are currently only two sizeable companies who provide sludge handling services in SEQ, meaning that the sludge handling services market is not as competitive as for grit and screenings handling. The limited number of providers is in part due to the fact that a company requires a licence to provide sludge handling services.

Efficiencies and economies of scale

The contracts were awarded following an open tender process by Brisbane City Council and so these rates are considered as efficient. A comparison has been made of the costs of the Deed of Variation contracts that detail the costs of providing the services to the full extent of Queensland Urban Utilities service area against the original contracts.

The Brisbane City Council contract with Thiess Services provides the costs of transporting the bio-solids and the costs of beneficial re-use in a cost per tonne. Additionally it states the costs of providing infrastructure such as hoppers and loading conveyors in a cost per year. The Deed of Variation contract with Thiess Services provides the costs of sludge handling in a cost per tonne. With respect to the contracts with Thiess Services the distances involved are not detailed and so only a high level comparison of costs has been completed. The rates are shown in the following table that demonstrates that they are comparable.

	Brisbane City Council contract ($/tonne)	Deed of Variation contract with Thiess Services ($/tonne)
Transporting bio-solids only	17.30 - 40.00	N/A
Transporting and disposing to beneficial re-use	48.91 - 53.54	35.09 - 41.24

The rates contained in the Hando's Tanker Hire contract with Brisbane City Council are stated in a cost per 22 tonne load that are $24.55 per tonne and $32.73 per tonne.

The Deed of Variation contract provided by Queensland Urban Utilities in response to our requests for information contains rates that have been provided on a cost per trip basis. Assuming that these are also for a 22 tonne load then the range of costs is $28.64 per tonne to $38.86 per tonne. This range of values corresponds to the range of values in the Brisbane City Council contract.

The Deed of Variation contract for Veolia Environmental Services does not contain rates with which a comparison can be made. However the proposal letter has been supplied for review. We have assumed that the rates contained in the letter are the ones used.

The services provided by Veolia Environmental Services are for the provision of storage bins and other infrastructure on site and the transportation and the disposal of the grit and screenings. The costs are broken down into a yearly charge for providing the infrastructure, a transport rate per service and a disposal rate per tonne. The infrastructure charges have not been broken down sufficiently in order to conduct a review of the costs. Additionally Veolia Environmental Services has applied variable rates for the supply of bins such that in some circumstances a five figure sum is charged and in others no charge is applied.

The transport rates in the Brisbane City Council contract are stated in a cost per bin. These costs can be calculated into a cost per cubic metre that is in the range of $30.50 per cubic metre to $102.67 per cubic metre. The costs in the Deed of Variation contract are in a cost per service format, assuming that a service is to transport one bin then these costs can be calculated into a cost per cubic metre too. These costs are in the range of $55.00 per cubic metre to $92.00 per cubic metre. This shows that the Deed of Variation contract rates correspond to the Brisbane City Council contract and so can be deemed efficient.

We have also reviewed the production volumes and contract rates for the disposal of sludge that have been applied to the western regions of Queensland Urban Utilities. Although these rates have not strictly been market tested, our examination has shown these to be a reasonable representation of the addition distances and travel time associated with western areas, with no extraordinary costs detected.

Benchmarking

We consider the cost of sludge handling to be dependent on the following factors:

- Amount of sludge produced, largely dependent on the equivalent population being serviced
- Degree of dewatering that is undertaken (reducing the volume of water carried reduces transportation costs)
- Method of disposal, largely determined by legislative requirements
- Distance to disposal site

The factors vary greatly across water authorities, and even within the three water retail/distribution entities in SEQ. Hence we do not consider that benchmarking will provide any reliable conclusions.

In this instance, we consider that the sludge handling costs budgeted by Queensland Urban Utilities has been market tested within a reasonable timeframe, and can be considered to be representative of an efficient market operator.

6.9.5. Summary

The operating costs are prudent as the cost drivers have been shown to be appropriate.

The methods used by Queensland Urban Utilities to estimate the amount of sludge produced is an reasonable approach, with more detailed methods applied to the larger treatment plants, and historical values used for smaller facilities.

The sludge disposal rates have been obtained originally through an open tender for the services and the Deed of Variation contracts have been shown to correspond to these rates. The rates are considered to be reflective of current market conditions. The rates that have been applied to the western areas are also considered to be reasonable, considering the additional travel distances to the treatment plants in the western region.

We conclude that the expenditure for sludge handling is both prudent and efficient.

6.10. Overall summary for operating expenditure

Queensland Urban Utilities has provided details of forecast operating expenditure in its 2011/12 Information Template. Total operating expenditure is $457.7 M, $513.7 M and $561.1 M in 2011/12, 2012/13 and 2013/14 respectively.

For the 2011/12 forecast, 65 percent of total operating expenditure is attributable to water services, 34 percent to wastewater services and 1 percent to non-regulated services. Due to the relative population within each of the geographic areas, Brisbane attracts 81 percent of total operating expenditure and Ipswich 13 percent. The western regional areas (Lockyer Valley, Scenic Rim and Somerset) each account for approximately two percent of total operating expenditure.

We have compared the forecast operating expenditure with that detailed in the information return approved by the Authority in 2010. It was observed that:

- The current information return forecasts total operating expenditure in 2010/11 will be $5.9M more than identified in the 2010 information return.
- The current information return forecasts total operating expenditure in 2011/12 and 2012/13 will be approximately $10 M less than identified in the 2010 information return.
- The primary reason for the reduction in forecast cost for 2011/12 and 2012/13 is a reduction in bulk water costs. As the price path for bulk water costs is fixed, we conclude that the reduction in bulk water costs is due to a reduction in demand forecasts.

We have reviewed Queensland Urban Utilities' forecast aggregate operating expenditure for 2011/12, 2012/14 and 2013/14. We note the following:

- Total operating expenditure has been compared with the other retail/distribution entities in SEQ using customer base, network size and volume metrics. Our analysis shows the following:

- Customer base: total operating costs are higher than those of national peer organisations, but similar to the other retail/distribution entities in SEQ
- Network size: total operating costs are higher than those of national peer organisations, but similar to the other retail/distribution entities in SEQ
- Volume: total operating costs are higher than those of national peer organisations, but less than the other retail/distribution entities in SEQ

- We have benchmarked the operating expenditure for water services with Australian industry peers. Our analysis shows that Queensland Urban Utilities, and the other SEQ retail/distribution entities, are seen to be higher than those of national peer organisations when benchmarked against customer numbers, network size and volume of water delivered. A large portion of water costs is for bulk water delivery – the cost of which is not controllable by Queensland Urban Utilities and is greater in SEQ than the other Australian capital cities used in the comparison.
- We have benchmarked the operating expenditure for wastewater services with Australian industry peers. Our analysis shows that Queensland Urban Utilities operating costs are on par or below those of national peer organisations and other SEQ retail/distribution entities

We conclude that when considered in aggregate, Queensland Urban Utilities' operating expenditure is comparable with industry peers, and we consider this expenditure to be reasonable.

We have reviewed forecast expenditure in detail for a sample of operating cost categories and applied a prudency and efficiency test. The sample included both water and wastewater services and covered 50 percent of total operating expenditure in 2011/12 (excluding bulk water expenses and non-regulated services). A summary of our findings is shown in **Table 43**. These figures do not included adjustments for revised demands, which are discussed in **Section 8**.

Table 43 Summary of prudency and efficiency of operating expenditure sample ($000s)

Category	Cost 2011/12	Prudent	Efficient	Revised cost 2011/12
Corporate costs	-	Prudent	Efficient[1]	-
Employee expenses	92,157.2	Prudent	Efficient[1]	92,157.2
Electricity costs	11,746.3	Prudent	Efficient	11,746.3
Chemical costs	4,513.7	Prudent	Efficient	4,513.7
Sludge handling	8,940.9	Prudent	Efficient	8,940.9

1 Assessment of efficiency accounts for the maturity of the business and constraints placed on the business (eg Workforce Framework Agreement).

We have assessed all expenditure within our sample to be prudent. We have assessed all expenditure within our sample to be efficient considering the maturity of the business and the constraints placed on the business.

7. Capital Expenditure

This section contains the review of prudency and efficiency of Queensland Urban Utilities' proposed capital expenditure for the 2011/12 financial year. The section includes the following sub-sections:

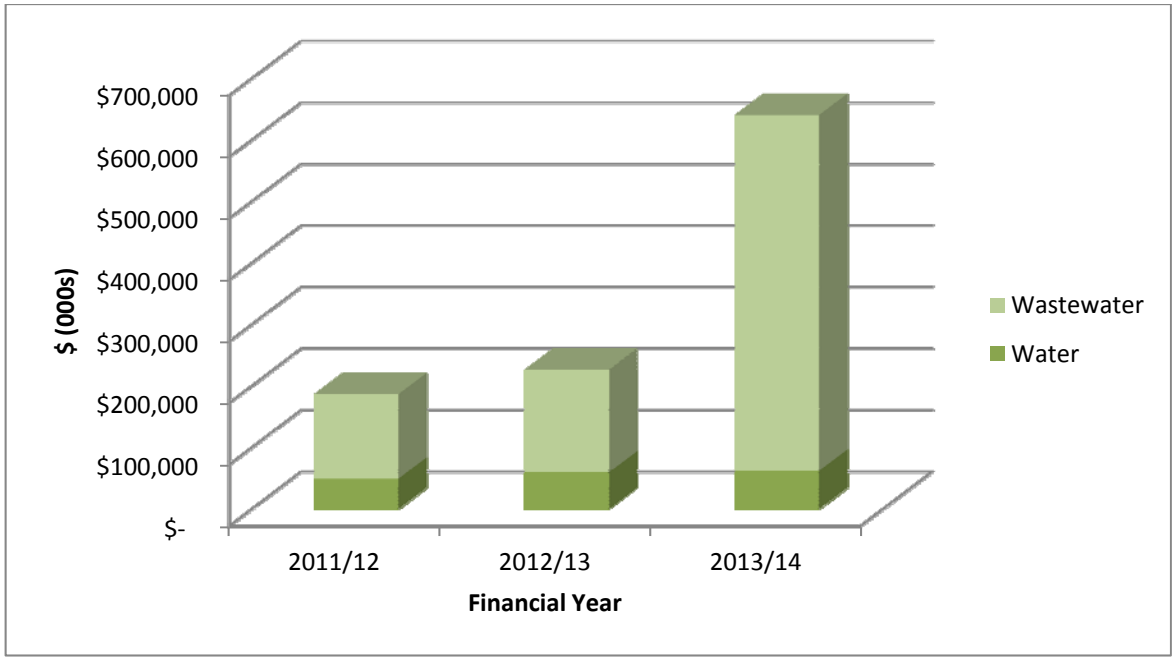
- Overview of Queensland Urban Utilities' capital expenditure for 2011/12
- SKM's sample selection
- Overview of prudency and efficiency of Queensland Urban Utilities' capital expenditure
- Detailed prudency and efficiency reviews of the each selected sample
- Summary and recommendations

7.1. Overview of capital expenditure

The Authority required that to assess the prudency of capital expenditure, Queensland Urban Utilities must attribute one or more of the following drivers to the capital expenditure projects submitted:

- *Growth* - capital expenditure designed to provide an increase in the capacity or capability of an asset in response to increased demand, growth or variations required by a customer
- *Improvement* - capital expenditure associated with an increase in the reliability or the quality of supply that is endorsed by customers, external agencies or participating councils
- *Compliance* - capital expenditure associated with the replacement and or enhancement of an asset to prevent a non-compliance with legislative requirements such as the Water Act, Water Market Rules, Grid Services Contract, Water Quality Guidelines and occupational health and safety
- *Renewal* - capital expenditure associated with the replacement and or enhancement of an asset that is currently compliant with service performance standards and legislative requirements but faces an unacceptable risk of future non compliance

Queensland Urban Utilities plans to commission $1.06 B in the three years to the end of the financial year 2013/14. The breakdown of costs on an as commissioned basis for the 2011/12 to 2013/14 financial years budgets can be seen below in **Figure 11**.



Source: Data template (Queensland Urban Utilities, 2011)

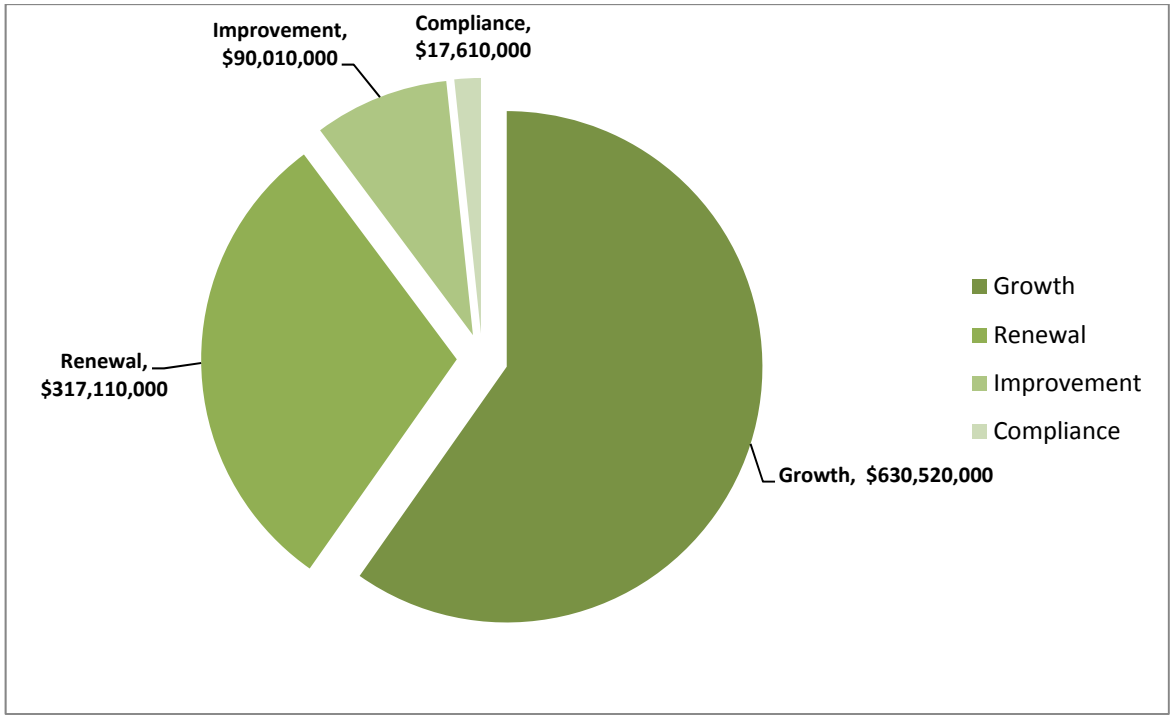
- **Figure 11 Forecast capital expenditure for 2011/12 to 2013/14 by category**

Table 44 and **Figure 11** detail and illustrate the staging of this expenditure on an as commissioned basis. Review of this information indicates that the proposed expenditure associated with commissioned works in 2011/12 and 2012/13 are comparable, however there is a significant increase (approximately 200 percent) in the projected commissioned expenditure in 2013/14.

The significant increase in as commissioned expenditure (some 200 percent) reflects the fact that a number of large, multi-year projects are forecast to be completed and hence commissioned in 2013/14. Information provided in Queensland Urban Utilities 2011/12 Information Template demonstrates that as incurred capital expenditure shows a modest decrease in 2013/14 from the previous year.

- **Table 44 Capital expenditure ($M) (as commissioned)**

	2011/12	2012/13	2013/14	Total
Capital expenditure	187.23	226.82	641.20	1,055.25
Capital expenditure (including contributed assets and establishment costs)	240.10	291.13	703.11	1,234.34
Difference	52.87	64.31	61.91	179.09



Source: *Data template* (Queensland Urban Utilities, 2011)

- **Figure 12 Forecast capital expenditure for 2011/12 to 2013/14 by cost driver**

Figure 12 illustrates the expenditure by driver. **Table 45** documents the expenditure by driver and the service.

- **Table 45 Forecast capital expenditure by cost driver and service ($M)**

	2011/12	2012/13	2013/14	Total
Growth	48.72	90.77	491.03	630.52
Renewal	108.38	89.24	119.49	317.11
Improvement	22.23	41.65	26.13	90.01
Compliance	7.90	5.16	4.55	17.61
Total	187.23	226.82	641.20	1,055.25
Comprising				
Water	49.75	60.53	62.66	172.94
Wastewater	137.49	166.29	578.54	882.31

Note: Capital expenditure is presented here on an 'as commissioned' basis as per Queensland Urban Utilities' submission. Commissioned assets are able to contribute productive capacity to the system. Source: *Data template* (Queensland Urban Utilities, 2011)

Review of **Table 45** indicates that the proposed expenditure for renewals, improvements and compliance are comparable from year to year. In addition the disaggregation by service illustrates a steady increase in expenditure in water services and the step change in expenditure in wastewater services in 2013/14.

The steady increase in expenditure in water services is reasonable as Queensland Urban Utilities is responsible for the distribution of water only, not the supply, treatment or conveyance of bulk water to key grid nodes. Conversely for wastewater Queensland Urban Utilities is responsible for the entire suite of municipal service, including treatment and release. As such there is expected to be step increases and subsequent decreases in capital expenditure as a result of the augmentation of wastewater treatment plants. A key future challenge for Queensland Urban Utilities will be to maintain compliant service whilst managing concurrent augmentations.

Table 46, **Table 47** and **Figure 13** detail the capital expenditure by regions.

- **Table 46 Capital expenditure for water by geographic area ($M)**

	2011/12	2012/13	2013/14	Total
Brisbane	37.75	41.86	40.30	119.90
Ipswich	7.72	11.87	13.35	32.94
Lockyer Valley	1.01	2.65	0.92	4.58
Scenic Rim	2.52	2.87	7.15	12.54
Somerset	0.74	1.29	0.95	2.97
Total	49.75	60.53	62.66	172.94

Source: Data template (Queensland Urban Utilities, 2011)

Review of **Table 46** illustrates a reasonable increase in the expenditure for water service in the Ipswich and Scenic Rim areas for which significant growth is predicted. The expenditure in the Brisbane, Lockyer Valley and Somerset regions is generally increasing at a moderate rate. This is expected.

- **Table 47 Capital expenditure for wastewater by geographic area ($M)**

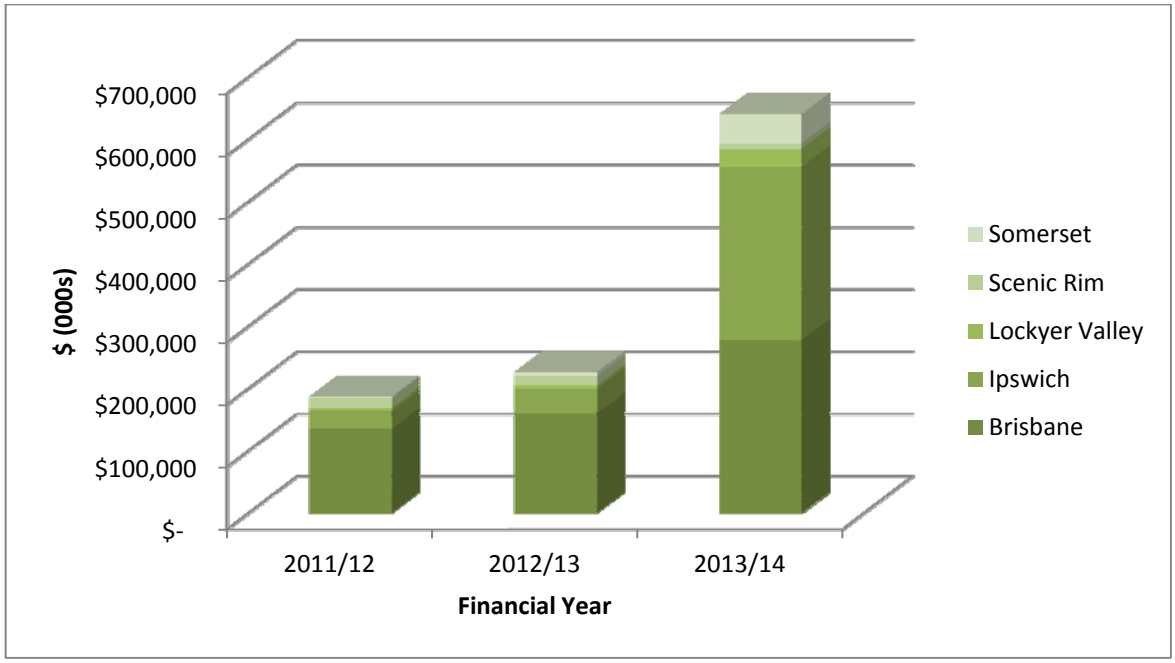
	2011/12	2012/13	2013/14	Total
Brisbane	97.74	118.13	237.18	453.05
Ipswich	21.38	28.28	265.02	314.68
Lockyer Valley	3.52	2.59	28.32	34.43
Scenic Rim	13.57	11.97	1.60	27.14
Somerset	1.27	5.32	46.42	53.01
Total	137.49	166.29	578.54	882.31

Source: Data template (Queensland Urban Utilities, 2011)

Review of **Table 47** illustrates the concurrent increase in capital expenditure in the Brisbane, Ipswich, Lockyer Valley and Somerset regions in 2013/14, with only a step decrease in expenditure in the Scenic Rim region. This illustrates the effect of concurrent augmentation of wastewater treatment plants in these regions, as discussed previously.

Whilst the smoothing of capital expenditure on wastewater treatment plants would reduce the potential for a price spike due to a supply constrained market, the concurrent expenditure could present opportunities for efficiencies of scale savings.

These outcomes, however, maybe diminished by activity in other sections, such as mining, which utilise very similar experience and construction resources.

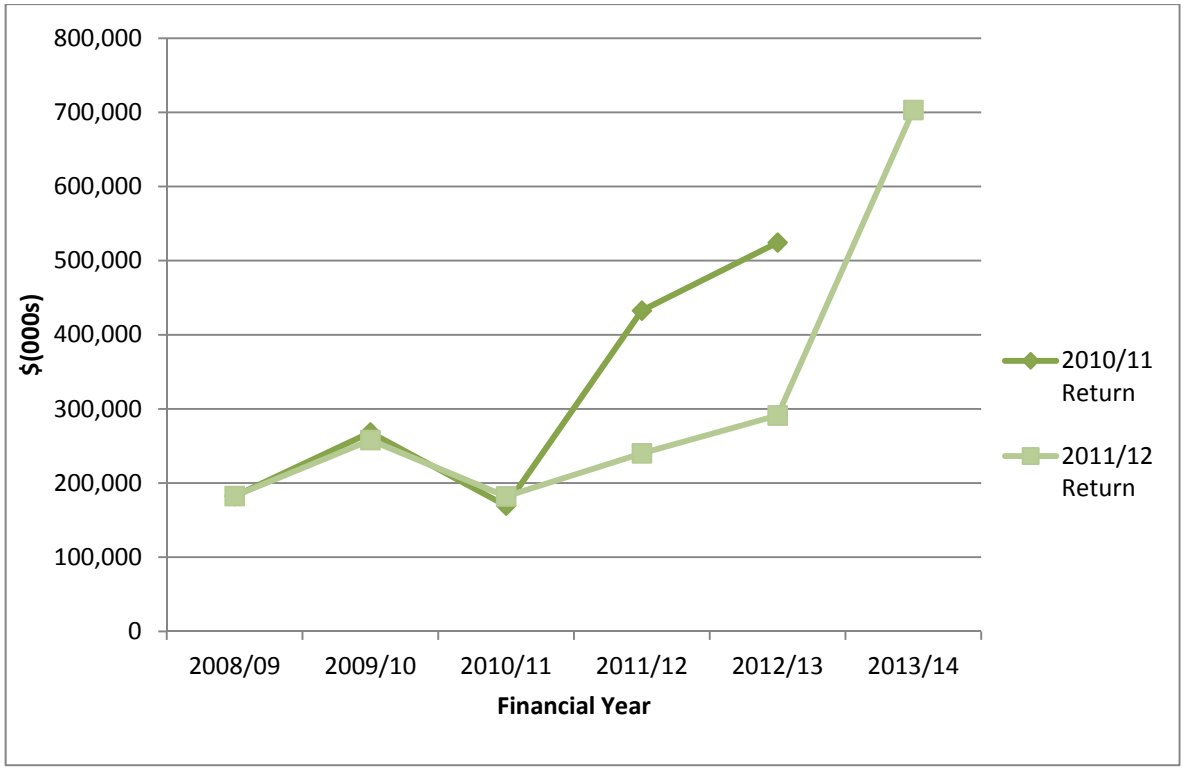


Source: Data template (Queensland Urban Utilities, 2011)

- **Figure 13 Forecast capital expenditure for 2011/12 to 2013/14 by geographic area**

7.2. Historical Delivery

Reasonable variances exist between the forecasts submitted by Queensland Urban Utilities in the 2010/11 Information Template and the 2011/12 Information Template. The variation for the 2011/12 and 2012/13 financial years are most pronounced with a $192 M and $233 M reduction in forecast capital expenditure respectively.



- **Figure 14 Comparison of forecasts – 2010/11 Submission and 2011/12 Submission ($000s)**

The variation between the 2010/11 and 2011/12 forecast capital expenditures are outlined below, in **Table 48**.

- **Table 48 Comparison of forecasts – 2010/11 and 2011/12 Submissions ($000s)**

Forecasts	Source	2010-11	2011-12	2012-13
2010-11 Submission	2010/11 Information Template	169,465	432,516	524,343
2011-12 Submission	2011/12 Information Template	182,053	240,096	291,132
Variance		12,588	-192,420	-233,211

Source: Data template (Queensland Urban Utilities, 2011 and 2010)

Review of **Figure 14** and **Table 48** indicates significant variation between the forecasts for the 2011/12 and 2012/13 financial years. It is not clear why this significant variation occurs however it is likely that restructuring is a primary cause.

The decrease in forecast expenditure in 2012/13 financial year produces a comparable expenditure when compared to the previous four years however it appears that this is likely the result of delay in project timing. The continued maturation of Queensland Urban Utilities from its recent creation,

with the subsequent optimisation of the capital expenditure profile should result in more comparable forecasts in the future.

In its submission Queensland Urban Utilities included the following table outlining budget and forecast capital expenditure, **Table 49**. It is noted that there is some variation between the capital expenditure outlined in the QCA Template and the written submission.

- **Table 49 Capital expenditure 'as-commissioned' - excluding donated assets ($000s)**

Driver	Capital Expenditure				
	2010/11[b]	2010/11[f]	2011/12[b]	2012/13[f]	2013/14[f]
Growth	21,009	13,014	48,723	90,765	491,028
Renewals	71,770	90,363	108,376	89,237	119,494
Compliance	8,300	11,846	7,903	5,162	4,550
Improvements	13,844	16,209	22,230	41,655	26,130
Total	114,922	131,432	187,231	226,819	641,202

Notes b = budget; f = forecast; Source: *Queensland Urban Utilities' Information Return 2011/12, Table 8-6* (Queensland Urban Utilities, 2011)

Table 49 illustrates that, for the 2010/11 financial year, the underspend for the growth division does not offset the overspend for the drivers of compliance, improvement and in particular renewals.

In Annex F of its submission Queensland Urban Utilities outlines the reasons for the key changes between the capital expenditure 'as-incurred' programme of 2010/11 and 2011/12 in the August 2010 submission and the August 2011 submission.

- **Table 50 Overview of Annex F adjustments ($000s)**

Capital Expenditure	2010/11	2011/12
Original	341,112	500,273
Revised	308,333	394,294
Change	-17,044	-105,979

Source: *Queensland Urban Utilities' Information Return 2011/12*, *Annex F* (Queensland Urban Utilities, 2011)

It is noted that there is significant difference between the variance determined from the figures in the QCA templates for 2010/12 and 2011/12 returns and that outlined by Queensland Urban Utilities in their August 2011 submission.

The main causes of variation identified by Queensland Urban Utilities for the 2010/11 forecast include:

- Flood recovery – $35.7 million increase due to unpredicted flood and damage

- Brisbane Trunk Sewers Renewal Programme - $5 million increase as completion of 2009-10 scope, funding required for emergency work (Nudgee Road Manhole) and increased costs
- Ipswich Woogaroo Creek (Goodna) Trunk Sewer Augmentation project – $10 million reduction due to mitigation of key risks and retendering for the excavated section of project
- Ipswich Goodna STP Upgrade project – approximately $20 million reduction due to delay of project and mitigation of key risks

The main causes of variation identified by Queensland Urban Utilities for the 2011/12 forecast include:

- Flood recovery – $15.6 million increase due to unpredicted flood and damage
- Fleet - $6 million increase as provision of funding for Fleet Renewals not included in the initial budget
- Brisbane Trunk Sewers Renewal Programme – $5.2 million increase due to increased scope identified for 2011/12, also increase in cost estimates
- Brisbane-Woolloongabba Sewer Catchment Augmentation Parts A & B – $17.5 million reduction due to cash-flow revision in light of the flood and delivery considerations
- Ipswich Goodna STP Upgrade project – $5.2 million increase due to increased scope identified for 2011/12, also increase in cost estimates
- Lockyer Valley Eastern Regional STP Upgrade project - $14 million reduction due to cash-flow revision in light of the flood, delivery considerations and review of timing
- Ipswich Bundamba WRP Upgrade – Stage 5a - $6.8 million reduction due to funding deferred and review of timing

7.3. Key Issues

7.3.1. Cost drivers

The Authority identified four cost drivers for the assessment of prudency for capital expenditure projects. Projects are considered prudent if they are required to meet:

- Growth – ie volume-related growth, due to increase in demand/customers
- Improvements – ie driven by imposed standards of service, or reduce future operating expenditure
- Renewals – ie replacement of aged/time expired assets
- Compliance – ie more demanding environmental legislation (eg nutrient emissions, pump station overflows, odour, etc.)
- A combination of the above

7.3.1.1. Growth driver

Growth is the most significant cost driver. It is dependent on several factors, including:

- **Accurate forecasts of increased usage per customer.** Trends in water usage have been impacted by the recent drought and water conservation measures introduced. Future forecasts have to take into the consideration "bounce back" effect after the drought. Whilst increases are expected once water conservation measures are reduced, some factors, such as the implementation of water-efficient fittings and fixtures and rain water tanks, will have a long term effect
- **There is limited historic demand data available.** Where it was available it was drawn from multiple sources (councils) and the data collection methods varied
- **There are changes in usage patterns.** Alternative sources of water have been introduced to reduce the reliance on potable water, such as rainwater and recycled water. The introduction of these alternative water sources will impact the demand for potable water. As a number of these systems have only recently been introduced on a large scale, there is limited data available on the quantum of this impact
- **Accurate forecasts in the increase in the number of customer connections.** SEQ is experiencing rapid growth and there are also lifestyle changes which can be linked to economic growth
- **Reliable long-term forecasting for long term assets.** Water and wastewater assets can have asset lives in excess of 50 years. Therefore, it is necessary to adequately size these assets for future years. Design of these assets has to incorporate population growth, as well as peaking factors. The impact of demand forecasting and water conservation measures also has to be taken into account

7.3.1.2. Renewals

This category relates to those capital projects triggered by the need to replace aged assets. Ideally, the assessment should be based on not only age of the asset, but the condition of the asset risk and the consequence of failure of the asset and its ability to meet future service delivery requirements without experiencing excessive maintenance costs. As such, the ability to draw accurate and current information from a robust asset database is key to justifying capital project expenditure against these criteria. The level of data collected by each of the previous councils on asset age and maintenance history will impact the level of justification available for renewal of assets.

There is generally a trend towards proactive asset management, where entities are moving towards a system based on condition assessments and risk assessment to select and prioritise asset renewals. Queensland Urban Utilities is embarking on processes of updating council asset information, which should facilitate the future justification of renewals projects.

7.3.1.3. Improvements

This driver underpins capital projects driven by a requirement to meet improvements in services standards.

For the initial price monitoring, assessment against this category was complicated by the fact that, historically, there had not been a common set of service standards adopted across the councils previously providing the services. As such, Queensland Urban Utilities is still in a process of harmonising the standards of service applied across its geographic area. Common standards of service have been developed by Queensland Urban Utilities and are now available, as discussed in **Section 5.3**.

7.3.1.4. Compliance

Compliance includes capital expenditure associated with meeting price monitoring or legislative obligations. This category is predominantly driven by changes in environmental legislation eg reduction in nutrient discharge levels, wastewater overflows, odour and operational health and safety requirements. This is perhaps the most definitive driver against which to assess prudency.

Of particular note for entities is the augmentation of wastewater treatment plants. In general, where a wastewater treatment plant is augmented (for any reason), resulting in capacity increases over a predetermined level (usually 10 percent), it triggers a requirement for the entire plant (not just the expansion project), to meet modern-day licence conditions. This is a unique feature of the water industry and is a significant contributor to capital expenditure in wastewater.

7.4. Sample selection

As part of this analysis, a sample of the capital expenditure projects for the 2011/12 budget have been analysed in detail in terms of their prudency and efficiency. The capital expenditures sample selection chosen by SKM in consultation with the Authority for detailed analysis is shown below in **Table 51**. These projects are assessed in detail in the following sections with an overview of the final assessment found in **Table 52**.

- **Table 51 Capital expenditure programs reviewed ($000s)**

Project	Category	2011/12	2011/12 - 2013/14
Sewer Trunk System Renewals Program	Renewal	14,219	21,381
ICT Strategy	Improvement	9,000	33,000
Brisbane Water Reticulation System Renewals Program	Renewal	7,811	21,289
Brisbane Wastewater Treatment Flood Recovery	Renewal	6,674	-
Fleet Replacement Program	Renewal	6,000	8,000
Auchenflower Branch Sewer Upgrade	Growth & Renewal	5,510	-

Project	Category	2011/12	2011/12 - 2013/14
Canungra Water Reclamation Plant Upgrade	Growth	3,345	-
Toowong Sewers Upgrade	Growth & Renewal	4,982	-
Mellor Place Trunk Sewer Upgrade	Growth	700	-
Total Sample (9 projects)		**58,241**	**83,670**

The sample has been selected based on the overall value of costs within the 2011/12 budget and to be representative of the various categories of costs. The review has focused on projects that are forecast to be commissioned in 2011/12, as subsequent to commissioning they would be added to the RAB.

The focus, combined with the short timeframe since the creation of Queensland Urban Utilities and that large capital expenditure projects are generally multi-year projects by their nature and extent, means that some of the projects where initiated by participating councils and utilised the procedures applicable at the time.

7.5. Overview of prudency and efficiency

Table 52 shows an overview of the final assessment made for each project of the project sample chosen for assessment of prudency and efficiency. A full summary with recommendations for each project can be found in the following sections of this report.

- **Table 52 Overview of prudency and efficiency of capital expenditure sample selection ($000s)**

Project	Cost 2011/12	Prudent	Efficient
Sewer Trunk System Renewals Program	14,219	Prudent	Efficient
ICT Strategy	9,000	Prudent	Efficient
Brisbane Water Reticulation System Renewals Program	7,811	Prudent	Efficient
Brisbane Wastewater Treatment Flood Recovery	6,674	Prudent	Efficient
Fleet Replacement Program	6,000	Prudent	Efficient
Auchenflower Branch Sewer Upgrade	5,510	Prudent	Efficient
Canungra Water Reclamation Plant Upgrade	3,345	Prudent	Efficient
Toowong Sewers Upgrade	4,982	Prudent	Efficient
Mellor Place Trunk Sewer Upgrade	700	Prudent	Efficient

7.6. Sewer Trunk System Renewals Program

7.6.1. Proposed capital expenditure

The Sewer Trunk System Renewals Program is a business wide program which covers the Brisbane, Ipswich, Scenic Rim, Somerset and Lockyer Valley regions. We have reviewed the Brisbane portion of the renewals program only. **Table 53** shows the proposed cost of the Brisbane sewer trunk system renewals program within the 2011/12 to 2013/14 budgets.

- **Table 53 Sewer trunk system renewals program Brisbane portion – Proposed capital expenditure profile**

	Costs ($000s)			
Source	**2011-12**	**2012-13**	**2013-14**	**Total**
2011/12 Information Template	14,219	10,381	11,000	35,600
2011/12 Capital Investment Program Project Summaries: Renewals Projects	14,219	-	-	14,219
Business Case for Trunk Sewer Renewals Program – Brisbane only	14,219	33,500	43,100	90,819

Table 54 shows the proposed cost of the whole sewer trunk system renewals program within the 2011/12 to 2013/14 budget.

- **Table 54 Sewer trunk system renewals program – Proposed capital expenditure profile**

	Costs ($000s)			
Source	**2011-12**	**2012-13**	**2013-14**	**Total**
2011/12 Information Template	15,267	11,214	11,897	38,378
2011/12 Capital Investment Program Project Summaries: Renewals Projects	15,267	-	-	15,267
Business Case for Trunk Sewer Renewals Program	15,267	34,840	44,690	94,797

The information provided in the 2011/12 Information Template submitted to the Authority for Brisbane for the 2011/12 to 2013/14 financial years agrees with the information provided in other supporting documentation however for subsequent financial years there is significant difference in the proposed capital expenditure. Additional information provided by Queensland Urban Utilities states that the business case was finalised after the submission to the Authority was made. The costs in the submission reflect information know shortly after the formation of Queensland Urban Utilities where as the information in the business case reflects the learnings from the first 12 months of operation. Queensland Urban Utilities indicated that the program size and budget has

increased to keep up with increased condition monitoring activity in the network and to address an ageing asset base.

7.6.2. Project description

The Trunk Sewer Mains Renewals Program is aimed at managing the risk associated with the ongoing deterioration of trunk sewer assets within each of the sewerage networks operated and maintained by Queensland Urban Utilities. The program aims to achieve the reliable and safe transportation of sewage from the sewerage reticulation networks to wastewater treatment plants without negative impacts on the community and the environment.

The program covers the rehabilitation and/or replacements of the trunk sewer networks. This includes all trunk sewer pipes and maintenance hole structures. The trunk sewer mains renewals programs covers all Queensland Urban Utilities regions, however this review will focus on the Brisbane region.

For the Brisbane region the program includes:

- Structural relining of 38 sewer main line segments using standard reline technology
- Structural relining of four sewer main line segments using special reline technology (slip lining with pre-manufactured GRP pipes)
- Structural relining of an additional nine sewer main line segments using special reline technology (slip lining)
- Rehabilitation of six maintenance holes
- Condition assessment of eleven trunk sewer segments using CCTV and laser profiling
- Condition assessment investigations of an additional eleven sewer main line segments

As the sewer network continues to age, discrete sections of trunk sewers deteriorate with time and become subject to repeated patterns of failure. Funding is required annually to enable sewers in poor condition to be relined or replaced, as required.

7.6.3. Provided documentation

The key reference documents used for this review are:

- *2011/12 Capital Investment Program Project Summaries: Renewals Projects*, Queensland Urban Utilities, February 2011
- *Request for Information Response QCA – SEQ Water and Waste Water Price Monitoring, BWWTCAA02 – Brisbane Sewer Trunk System Renewals Program*, Queensland Urban Utilities, September 2011

- *Business Case for Rolling Trunk Sewer Renewals Program 2011/14*, Queensland Urban Utilities, May 2011
- *Brisbane Water Trunk Sewer Maintenance Methodology*, Brisbane Water, 2009
- *Water Services Association of Australia – Conduit Inspection Reporting Code of Australia WSA 05-2008 Second Edition Version 2.2*, WSAA, May 2008
- *Sewer Trunk System Renewals Program – Program List Financial Year 2011/12*, Queensland Urban Utilities, 2011
- *Submissions for Trunk Sewer Renewals Program*, Queensland Urban Utilities, Various

7.6.4. Prudency

Cost driver

The nominated cost driver for this program by Queensland Urban Utilities is renewal. Sewer trunk mains are critical infrastructure in the operation of a sewerage network, in most cases without redundancy, consequently there can be severe consequences of failure of the mains. Identifying assets in poor condition for rehabilitation prior to failure reduces the likelihood of failure occurring and the associated consequences ensuing.

The conclusion that this program is driven by renewal is supported by:

- *Business Case for Rolling Trunk Sewer Renewals Program 2011/14*, Queensland Urban Utilities, May 2011
- *Brisbane Water Trunk Sewer Maintenance Methodology*, Brisbane Water, 2009
- Water Services Association of Australia – Conduit Inspection Reporting Code of Australia
- Environmental Impacts measure of the Design Standards – Source Documents Sewerage network desired standards of service
- Reliability measure of the Design Standards – Source Documents Sewerage network desired standards of service

The project has been assessed as prudent. The primary driver of renewal has been demonstrated.

Decision making process

The overall approach adopted by Queensland Urban Utilities for addressing the issue of deteriorating sewer trunk mains was arrived at through continuation of business as usual.

When determining specific assets to be included in the program an asset management processes is undertaken. The process involves the following:

- Selective inspection strategy and condition forecast modelling - cohort sampling outcomes used to implement the condition assessment strategy driving the identification of assets to be included in the structural condition based sub program
- Net Present Value financial analysis - direct cost comparison of future maintenance cost vs. rehabilitation cost as per Queensland Urban Utilities *Trunk Sewer Maintenance Methodology*
- Ongoing testing of Queensland Urban Utilities' sewage salinity levels of problem catchments - direct cost comparison between rehabilitation cost and increased cost to operate the network and sewage treatment issues
- Evidence based condition monitoring program using CCTV - used to identify and prioritise individual assets for inclusion in structural condition based rehabilitation sub program
- Analysis of as constructed information and asset location information

The asset management process is supported by the *Trunk Sewer Maintenance Methodology*. The methodology is a tool used to:

- Understand the assets, required level of service and regulatory compliance requirements
- Define the maintenance requirements for the asset class being managed, by utilising the maintenance methodology
- Define the activities and the schedule for the maintenance
- Define the intervention strategy for poorly performing assets

A sewer asset condition class is determined based on structural integrity, operational performance and environmental impact aspects. The classes range from one to five, with one having insignificant defects and five having severe defects present with imminent loss of structural integrity almost certain.

To determine whether an asset needs to be rehabilitated or replaced the current asset replacement cost of the asset is determined to enable comparison of asset replacement options with rehabilitation options, which extends the asset life by a certain period only.

To assess if the process described in the supporting documentation was followed we requested that Queensland Urban Utilities provides the assessment for the projects included in the 2011/12 Program List. This information was not provided therefore we are unable to determine if the process was followed.

In summary, trunk sewer mains are critical components in the sewer network and measures to ensure that network integrity is guaranteed are essential. On the basis of the above analysis, the program has been assessed as prudent.

7.6.5. Efficiency

The scope of works

The purpose of this rolling program is to rehabilitate trunk sewers that have reached poor structural condition. Projects are prioritised based on customer service reliability standards, history of failure, condition of assets and risk assessment.

The Sewer *Trunk System Renewals Program – Program List Financial Year 2011/12* outlines all the projects to undertaken. Some projects included in the program are:

- Breakfast Ck Sewer from Campbell St to Edmondstone Rd in Bowen Hills - $2.5 M (1.5 km)
- Brisbane Trunk Sewer Relines – $2.35 M (5.3 km)
- Trunk Maintenance Hole Rehabilitation – $2.4 M
- Brisbane Cowper Street Syphon Stage 1 – $0.75 M

We understand that the trunk sewers to be replaced in 2011-12 have been assessed as being in Class 5 (very poor) or Class 4 (poor) condition.

Standards of service

This program is supported by the Queensland Urban Utilities *Design Standards – Source Documents* and the *Brisbane Water Trunk Sewer Maintenance Methodology*. Trunk sewers are the backbones of the sewerage transportation network carrying significant flow volumes and are defined as non-failure assets under the Queensland Urban Utilities asset management principles. The *Design Standards – Source Documents*, Sewerage network desired standards of service sets out the measure by which the sewerage network is assessed. Of relevance to this program are reliability and environmental impacts, as outline below.

- **Table 55 Design Standards**

Measure	Planning criteria (qualitative standards)	Design criteria (quantitative standards)
Reliability	All development has access to a reliable sewerage collection, conveyance, treatment and disposal system.	▪ Local government standards in planning scheme and planning scheme policies ▪ Customer service standards ▪ Customer service obligations
Environmental impacts	The environmental impacts of the sewerage network are minimised in accordance with community expectations.	▪ Compliance with the requirements of the Environmental Protection Act 1994 and associated Environmental Protection policies

Note: Extract from Annex D of the *Queensland Urban Utilities Information Return 2011/12* (Queensland Urban Utilities, 2011)

The quantitative design criteria outlined above are not specific and would be hard to quantify. We recommend that these criteria be defined clearly.

Project cost

Queensland Urban Utilities utilises a cost estimation database for simple rehabilitation submissions. The first set of unit rates were supplied by a consultant in 2007. Queensland Urban Utilities advises that the data base is updated annually based upon actual project construction costing. Queensland Urban Utilities further advises that they put out a number of relining tenders each year so their understanding of the market is contemporary and comprehensive.

Costing documentation has been provided for trunk reline cost unit rates, flow control unit rates and traffic management unit rates. For the trunk reline cost unit rates, conditions included pipe diameters (from 150 mm to1650 mm diameter), site access conditions (for easy, moderate and difficult), depth of pipe (0-3 m, 3-6 m, 6-9 m, 9-50 m) and length of pipe (0-100 m, 100-300 m, 300-2000 m). For the combinations of these conditions unit rates are provided (dollars per meter).

Queensland Urban Utilities advises that complex rehabilitation works, assessed by feasibility, are costed manually through market testing during the feasibility stage. The pre-market cost estimates are developed utilising the costing tool (Brisbane Summary of Rates Costing Document), which was provided in Queensland Urban Utilities response to a request for information. The cost estimates are based on technical submissions and budget pricing received from the market as part of early contractor involvement process. Actual costs are determined through tender pricing.

The actual costs have been arrived at through a competitive tender process, and therefore are believed to accurately represent the current market value of the proposed project. We have not reviewed the original tender documents. Of the six types of projects that have been identified for completion in the 2011/12 financial year three have actual costs derived from tender returns, **Table 56**. This equates to approximately 60 percent of the total estimated costs for the program.

- **Table 56 Comparison of estimated and actual costs**

Rehabilitation Method	Estimated Cost ($000s)	Actual Cost from Tender ($000s)
Structural relining using standard reline technology	2,829	2,354
Structural relining using slip lining with pre-manufactured GRP pipes	3,200	3,200*
Rehabilitation of maintenance holes	2,415	NA
Structural relining slip lining	4,500	4,500*
Condition assessment using CCTV and laser profiling	1,500	NA
Condition assessment investigations	1,500	NA
Total	15,944	

Note: Extracted from the *Sewer Trunk System Renewals Program – Program List Financial Year 2011/12* (Queensland Urban Utilities, 2011); * From 2010/11 tendering

We believe that the use of a cost estimation database which is updated annually to reflect changes in market conditions is a satisfactory method of determining costs estimates. The determination of actual costs from market tenders for projects within the program are consistent with conditions prevailing in the markets. We conclude that the costs are efficient.

7.6.6. Timing and Deliverability

The program for the projects is intended to take place over the entire 2011/12 reporting period. The program list for 2011/12 financial year incorporates projects that were to be completed in the 2010/11 financial year.

- **Table 57 Historic Sewer Trunk System Renewals - Brisbane**

Year	Trunk Sewer Renewal (km)	Budget ($)
2008/09	2 km	1,680,000
2009/10	5 km	9,508,000
2010/11	6 km	11,800,000

Note: Extract from Annex D of the Queensland Urban Utilities Information Return 2011/12

The program for Brisbane for the 2011/12 financial year includes approximately 6 km works with a budget of $14,219,000. Based on previous years' programmes, we conclude that this program can be delivered within the program timelines.

Projects within the program are delivered by Queensland Urban Utilities Major Projects and Commercial Services Branch through an existing panel of approved rehabilitation contractors.

Risks to the delivery of the program have been identified, these include:

- Market capacity - weather issues as most of the trunk sewer work in Brisbane can only be undertaken in the dry weather period. This shortens the available construction times and requires additional construction resources and leads to increased traffic management problems as multiple projects have to be undertaken at the same time

7.6.7. Efficiency Gains

No efficiency gains have been identified for this project.

7.6.8. Allocation of overhead costs

Not applicable as no overheads have been allocated.

7.6.9. Policies and procedures

Compliance with the Authority's initiatives is summarised in **Table 58** below.

- **Table 58 Sewer trunk system renewals program - compliance with the Authority's initiatives**

Initiative	Achievement Yes/No/Partial	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole of entity) perspective	Yes	The program has been developed to consolidate the two separate Trunk Sewer Renewal programs. Each project is assessed prior to inclusion to the program.
A standardised approach to cost estimating, including a standardised approach to estimates for items such as contingency, preliminary and general items, design fees and contractor margins, so that there is uniformity of cost estimating across all proposed major projects	Partial	A standardised approach is applied to the cost estimation for assets to be included in the program, however this approach is not applied across all projects.
A summary document to be prepared for identified major projects so as to facilitate standardised reporting	Yes	A standardised summary document has been provided for the program.
An implementation strategy to be developed for each major project that includes recommendation on delivery methodology, program and a risk review process	Partial	A specific implementation strategy has not been developed for this program, however delivery methodology and a program list are included in the 'Sewer Trunk System Renewals Program – Program List Financial Year 2011/12'. For each project tendered within the program a 'Rehabilitation Submission for Rolling Program' is prepared which outlines the risks, condition assessments, delivery mechanisms, site constraints and rehabilitation requirements, among others.
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	Partial	Queensland Urban Utilities has a 'gateway' review process which is mentioned in some documentation however specific information is not provided for all stages.

7.6.10. Summary

The Sewer Trunk System Renewals Program is a continuation and expansion on programs run by the respective councils prior to the formation of Queensland Urban Utilities.

The project has been assessed as prudent. The primary driver of renewal has been demonstrated. The maintenance of trunk sewer infrastructure is essential for the continued operation of the sewer network.

The project has been assessed as efficient. The scope of works meets the needs of the program and the costs associated with the program have been determined through monitoring and comparison of tender pricing from the market with database rates.

Value of expenditure not considered to be prudent or efficient – NIL.

7.7. ICT Strategy

7.7.1. Proposed capital expenditure

Table 59 shows the proposed cost of the ICT Strategy Project within the 2011/12 to 2013/14 budgets.

- **Table 59 ICT Strategy Project – Proposed capital expenditure profile**

	Costs ($000s)			
Source	**2011-12**	**2012-13**	**2013-14**	**Total**
Regulatory Submission to the Authority	9,000	18,000	15,000	42,000
Overall Program (8 March 2011)				
Focussed customer management program	1,409	1,134	3,869	
Efficient creation & management of asset program	3,449	11,195	9,564	
Providing smart information program	1,482	2,279	2,700	
Corporate support program	1,304	3,732	3,189	
Enterprise architecture program	768	1,153	768	
Infrastructure delivery program	1,742	3,111	1,615	
Total	10,155	22,603	21,706	54,464
Total mandatory requirements	6,552	16,697	13,155	36,404
Total preferred highly desirable requirements	3,604	5,907	8,551	18,062

7.7.2. Project description

Information and Communication Technology (ICT) services are presently supplied by the Brisbane City Council through an SLA. At present the ICT program is under review on the basis that full separation from Brisbane City Council will take place and that there is limited opportunity to leverage Brisbane City Council as an ongoing provider.

Queensland Urban Utilities has developed an ICT Strategic Vision and is at the beginning of a rolling three year ICT investment program. The ICT Strategic Vision is intended to guide the decision making and allocation of funds and resources for Queensland Urban Utilities. The ICT Strategic Vision is formed by taking recognition of the Queensland Urban Utilities Corporate Plan, events in the industry as well as an architectural view of it current and future assets.

The ICT Strategy Vision is concerned with ICT solutions that support business needs and contribute to Queensland Urban Utilities achieving its corporate objectives. The objective of the work to date has been to produce underpinning deliverables that will strengthen the development of IC&T capability and investment for Queensland Urban Utilities.

The IC&T Strategic Vision is stated as:

> *"Leverage technology to enable and support business growth change while delivering an assured business platform in a cost effective manner"*

that:

- Strategically aligns, contributes to and progressively builds the desired organisation vision
- Ensures IC&T capability is positioned for growth and responsive to changing priorities and new and emerging technologies
- Ensures an integrated, flexible and optimum IC&T capability is formulated, while considering the varying delivery and operational models
- Aligns all IC&T investments with key corporate outcomes and specific initiatives
- Positions Queensland Urban Utilities to leverage from, influence and participate in, the emergent water agenda while leveraging existing capability and investments made to date

7.7.3. Provided documentation

The key reference documents used for this review are:

- *IC&T Strategic Vision – Supplementary Information to January 2011 Board presentation*, Queensland Urban Utilities, January 2011
- *Information, Communication and Technology Strategic Vision - Discussion and Information Paper V2.0*, Queensland Urban Utilities, January 2011
- *Board/ELT Workshop Minutes*, Queensland Urban Utilities, 22 March 2011
- *QUU Board & ELT Workshop*, Queensland Urban Utilities, 22 March 2011
- *IC&T Vision - Findings Discussion Paper Version 2.06 DRAFT*, Queensland Urban Utilities, 2010

7.7.4. Prudency

Cost driver

The identified cost driver/s for this project is improvement. The documentation that we have reviewed as part of this process confirms that Queensland Urban Utilities identified through consultation meetings that there was a need to implement a separate ICT strategy to that of the councils. The separation from Brisbane City Council, initiated by Brisbane City Council,

contributed to the decision of implementing a new ICT strategy. Brisbane City Council is considering the following four options when discussing potential separation:

- Treat Queensland Urban Utilities as a 'logical' division of Council (Brisbane City Council)
- Customise services to Queensland Urban Utilities
- Provide infrastructure related serviced to Queensland Urban Utilities
- Provide no services to Queensland Urban Utilities

It is noted from the documentation that the preferred option for Brisbane City Council is to not provide services to Queensland Urban Utilities with the possible exception of infrastructure services. We have since been advised by Queensland Urban Utilities that Brisbane City Council has mandated total separation of Queensland Urban Utilities ICT systems from Brisbane City Council.

Decision making process

Queensland Urban Utilities has identified key decisions that are to be made as part of the ICT Vision Development Roadmap. The two key questions upon which decisions needed to be made were:

- Should Queensland Urban Utilities separate IC&T enabling capability from Brisbane City Council?
- What are the alternative sourcing options for Queensland Urban Utilities?

Both of the above decisions are dependent on whether Queensland Urban Utilities shares system development with Brisbane City Council or implements its own enterprise resource planning (ERP) solution as this drives the overall separation decision and the resulting impact on core and enabling technology.

The decision in regard to separating the IC&T capability from Brisbane City Council makes use of the following assessment criteria: cost effectiveness, diversification of services, efficiency, integration, agility and risk. Each assessment criteria has the same weight. Two options were investigated: Brisbane City Council implementation and Queensland Urban Utilities driven implementation. Based on this assessment it was recommended that the Queensland Urban Utilities driven implementation be pursued. The IC&T Vision, findings discussion paper states: "*QUU driven implementation provides the most flexibility and control over "their own destiny" for QUU, enabling future growth and expansion into alternative services and markets*"

The second decision, relating to alternative ERP sourcing options available to Queensland Urban Utilities, made use of a weighted score method. The assessment criteria and respective contributing weight are as follow:

- Commercial agreement, 10%
- Control, 5%
- Cost effective, 20%
- Risk, 15%
- Business transformation, 15%
- Operational support, 5%
- Agility, 10%
- Enabling solution impact, 5%
- Diversification of services, 15%

We consider the weighted score and assessment criteria used to be appropriate.

The assessment considered the following five ERP sourcing options:

- Queensland Urban Utilities solution/Brisbane City Council infrastructure
- BaSe Solution - Queensland Urban Utilities selects BaSe solution for ERP
- Internally sourced - Queensland Urban Utilities designs, builds, operates and owns the application and infrastructure
- Externally sourced - Queensland Urban Utilities enter into a commercial agreement with an external service provider
- Collaboration - Queensland Urban Utilities enters into a commercial agreement under appropriate governance with an external utility organisation

From the assessment it was recommended that externally sourced and the collaboration of sourcing options offer the most flexibility to Queensland Urban Utilities and that the two options cost benefit viability should be investigated further. We consider the options investigated and recommendation to be appropriate.

7.7.5. Efficiency

The scope of works (Project Definition)

We have been advised in a briefing by Queensland Urban Utilities that the ICT strategy project is intended to:

- Establish a wide area network IT system within Queensland Urban Utilities
- Establish 1500 desktop PCs, associated platform, operating system and user software to replace Brisbane City Council's infrastructure currently used by Queensland Urban Utilities
- Implement an Enterprise Resource Planning system (ERP) covering:

  - Human resources functionality
  - Works management
  - Finance system
- Implement a retail billing system
- Develop a customer database, migrating data from Brisbane City Council's systems
- Establish a Geographic Information System (GIS)
- Establish a call centre
- Integrate 7 separate SCADA networks

Queensland Urban Utilities has provided documentation detailing the processes that has been followed to arrive at this point of development of its ICT Program.

Queensland Urban Utilities has made a distinction between components of the ICT Strategy Project that are mandatory requirements and those that would be highly desirable. The total cost breakdown between the two is presented within **Table 59**.

We consider the scope definition and decision making processes followed to be appropriate.

Standards of service

The standard of the service is a function of the implementation stage and how well the new system can link with the existing infrastructure or base database. With the limited information to our disposal we are not in a position to provide comment on the standard of service to be provided.

Queensland Urban Utilities has outlined an IC&T governance framework. This framework has been designed to ensure that effective strategic level decisions are made and to ensure the delivery of the requirements of business outcomes. The IC&T governance structure is supported by: IC&T Steering Committee (ISC), IC&T Portfolio Management Groups (IPMG's) and IC&T Operational Committee (IOC).

The program budget as prepared in March 2011, as set out in **Table 59** above, differentiates between mandatory requirements and preferably highly desirable requirements. The capital expenditure budget applied for allows in most cases for a median between the mandatory and the preferably highly desirable requirements.

Project cost

The current cost of services provided to Queensland Urban Utilities by Brisbane City Council for ICT services is $10 million per annum under the TSA. It is stated within the Queensland Urban Utilities Board and ELT presentation that the service agreement with Brisbane City Council is a cost effective agreement but that it is not sustainable in the longer term as it assumes that Queensland Urban Utilities is a logical division of Brisbane City Council and further that the Transition Service Agreement (TSA) does not fully account for all applicable corporate overheads.

Queensland Urban Utilities undertook a cost estimate exercise to scope the option should Queensland Urban Utilities remain with Brisbane City Council as a customised service. The estimate indicated an increase from $10 million to $21 million for the TSA services costs and an increase from $2 million to $19 million for the IC&T investment profile cost. However, the detailed costing of the two components was not made available for our review.

For projects of this nature, which tend to be tailored in their scope and implementation to the individual business needs of the entity concerned, a detailed cost estimate is required to be developed against which the project costs can be compared to enable specific cost efficiency to be determined. Development of such a detailed comparison cost estimate is deemed to be outside the scope of our assignment. Also, the information that is required to compile a rough order cost estimate is not publically available. In light of the above, and in absence of other benchmarking data the costing undertaken by two of the water utilities, (Allconnex Water and Unitywater) for implementing a business wide ICT system has been compared to one another. A summary of the comparison is given in the table below.

- **Table 60 ICT cost comparison between the three Water Utilities**

	Cost ($000s)	
Component	**Allconnex Water**	**Queensland Urban Utilities**
ERP Components		32,433
Other ICT Components		22,031
Total ICT Cost		54,464

The information presented in the cost comparison table shows that the budget capital cost submitted by the various utilities is within the same range. It is to be noted that due to the highly variable cost and contributing factor of implementation and that each of the three utilities have a different existing configuration and final product expectation the final cost of implementation may vary considerably.

We note that Queensland Urban Utilities has proposed to go to the market to test the cost estimate. Based on a competitive tender process proposed and being a market related estimate we considered the capital expenditure cost put forward to the Authority to be efficient.

7.7.6. Timing and Deliverability

The documentation made available for our perusal contains an ICT Program for 2011/12 for implementing the various components. An assessment of the risks involved with delivering the project was undertaken. The documentation reviewed state that the risk identified has not been formalised. Once the risk has been formalised it is proposed that the IC&T Steering Committee monitor the risk. For this purpose the detailed project status reports contains a section dedicated to identifying risk.

The ICT vision is to be implemented over a three year period. The documentation presented does not contain enough information to ascertain what the current project status is as such it is difficult to form an informed conclusion as to whether the project will be able to be delivered within the three year timeframe.

7.7.7. Efficiency Gains

The IC&T Vision, Findings Discussion Paper states: *"Significant savings for both IC&T Business as a result of longer term operational efficiencies"* would be achieved by using Queensland Urban Utilities to implement the ERP. However, these are not quantified.

7.7.8. Allocation of overhead costs

As the project is a business wide corporate ICT system, all costs represent overhead costs.

7.7.9. Policies and procedures

The following table summarises whether the Authorities policies and procedure initiatives, as detailed in the 2010/11 report, were followed by Queensland Urban Utilities.

- **Table 61 ICT Strategy Project - compliance with the Authority's initiatives**

Initiative	Achievement Yes/No/Partial	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole of entity) perspective	Yes	The project is necessitated due to BCC's mandate of total separation. The efficiency is based on comparing similar cost from the other two utilities
A standardised approach to cost estimating, including a standardised approach to estimates for items such as contingency, preliminary and general items, design fees and contractor margins, so that there is uniformity of cost estimating across all proposed major projects	No	No standard approach to cost exists for this type of project. The various components of the ICT strategy have been costed. Queensland Urban Utilities has made a split between mandatory requirements and highly desirable.
A summary document to be prepared for identified major projects so as to facilitate standardised reporting	Yes	A standard progress report has been developed to assist the IC&T Steering Committee in managing the project implementation, however we are not aware of a summary document being produced
An implementation strategy to be developed for each major project that includes recommendation on delivery methodology, program and a risk review process	Yes	The ICT Strategic Vision contains contain an approach to risk management, program and the proposed delivery methodology
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	No	No information sited showing milestone to be achieved with a review process to take place.

As can be seen from the above table this project has components that comply completely, partially and not at all to the initiates that the authority has set out in the 2011/12 report.

The documentation provided does show that the required sign-off was received for the various components.

The proposed method of procuring the ICT components is by competitive tendering.

7.7.10. Summary

We consider that the Queensland Urban Utilities has provided sufficient information to establish that the project is prudent based on the requirement for improvement and the consideration of Queensland Urban Utilities becoming totally separated from Brisbane City Council.

We considered that the project is efficient based on the cost comparison with the cost submitted by Allconnex Water.

7.8. Brisbane Water Reticulation System Renewals Program

7.8.1. Proposed capital expenditure

Table 62 shows the proposed cost of the Brisbane Water Reticulation System Renewals Program within the 2011/12 to 2013/14 budgets.

- **Table 62 Brisbane Water Reticulation Systems Renewals Program – Proposed capital expenditure profile**

	Costs ($000s)			
Source	**2011-12**	**2012-13**	**2013-14**	**Total**
2011/12 Information Template	7,811	10,989	10,300	29,100
Business Case for Water Reticulation Systems Renewals Program Project Reference ADWDAA01,30/08/2011	7,811	12,000	16,000	35,811
2011/12 Capital Investment Program Project Summaries: Renewals Projects	7,811	-	-	-
Water Reticulation Mains Renewals Program, Program List (BDWDAA01), April 2011	7,422	-	-	-

The costs presented in the supporting documentation match the costs within Queensland Urban Utilities submission to the Authority for the 2011/12 year with the exception of the *Water Reticulation Mains Renewals Program, Program List (BDWDAA01)*. We sought clarification on the differences in cost for the 2011/12 year and Queensland Urban Utilities advised that:

> *"The values presented against the BDWDAA01 identification represent April 2011 premarket cost estimates of the renewals works based upon the costing tool (Brisbane Summary of Rates Costing Document).*
>
> *The values presented against the ADWDAA01 identification represents August 2011 costs and are a combination of pre-market cost estimates and post-market (i.e. tender or contractually committed actual) costs of the renewals works. This list has been prepared as part our standard the internal budget review and reprioritisation process."*

There are also differences in the costs in subsequent years. We sought clarification on this and Queensland Urban Utilities advised that:

> *"The copies of the Business case for water reticulation systems renewals program and the Water Reticulation Mains Renewals Program, Program List (ADWDAA01) that were provided were updated post development of the 2011/12 budget and reflect internal draft working estimates used as part of the ongoing budget review process."*

Considering the clarification provided by Queensland Urban Utilities, the costs provided in the *Business Case for Water Reticulation Systems Renewals Program* will be examined throughout this review as they are the most recently developed costs.

7.8.2. Project description

Water reticulation mains are small distribution mains which deliver water to customers. The asset strategy for a water reticulation network is 'operate to replace'. To manage the failure rate across the water network, the network is constantly monitored to identify poorly performing water mains which are impacting customers.

The maintenance methodology for burst mains is to replace or modify the existing infrastructure to reduce the consequences and/or likelihood of further failures on burst mains with significant risk. There are a number of factors that increase the consequences/risk of a burst main including:

- Previous failure history
- Property damage
- Major traffic disruption
- Interruption to water critical customers
- Significant repair costs and environmental impact

As the water supply network continues to age, discrete sections of water mains deteriorate with time and become subject to repeated patterns of failure. As failure patterns increase, it becomes more economical to replace water mains, rather than continuing to repair them. The Water Reticulation Main Renewals Program is part of the ongoing commitment to maintain the water reticulation networks operated and maintained by Queensland Urban Utilities

The Brisbane Water Reticulation System Renewals rolling capital program was established to renew or replace reticulation mains that are:

- Deteriorating and poorly performing (under the burst mains sub-program)
- Classed as having a high consequence of failure (under the critical mains sub-program)

- Modifications due to renewal of local areas (under the urban redevelopment/major roads/suburban centre improvements projects)

Water main renewals are prioritised based on the customer, social and economic impact of the failure.

The funding level for the project is determined by risk analysis, degradation modelling and life cycle analysis. The program size has increased over the years to maintain the overall performance of the water reticulation mains (burst rates) in the network and address the ageing asset base.

7.8.3. Provided documentation

The key reference documents used for this review are:

- *Business Case for Water Reticulation Systems Renewal Program, Revision 1*, Queensland Urban Utilities, 29 April 2011
- *2011/2012 Capital Investment Program Renewals Project Summaries: Renewals Projects*, 1 Queensland Urban Utilities, 7 February 2011
- *2011/2012 Capital Investment Program Support Services Project Summaries*, Queensland Urban Utilities, 21 January 2011
- Request for information response QCA – SEQ Water and Waste Water Price Monitoring
  - Executive Summary
  - *Business Case for Reticulation Systems Renewals Program*, Project Reference ADWDAA01, Queensland Urban Utilities, Revision 1, 29 April 2011
  - *Water Reticulation Mains Renewals Program*, Program List, Project Reference ADWDAA01, Queensland Urban Utilities, 30 August 2011
  - BDWDAA01 2011-12 6 Month Project Delivery List
  - *Water Reticulation Network Maintenance Methodology*, Brisbane Water, 23/02/2026
  - Costing Documents
  - *Rehabilitation Submission for Rolling Program*, Project Reference No BDWDAA01 29 August 2011
  - *Rehabilitation Submission for Rolling Program*, Project Reference No BDWDAA01-A06 (part)

7.8.4. Prudency

Cost driver

The cost driver nominated by Queensland Urban Utilities in the *2011/12 Capital Investment Program Summaries: Renewals Projects* is renewal.

The request for information response executive summary states:

> *"The Water Reticulation Main Renewal program is part of the ongoing commitment to maintain the water reticulation networks operated and maintained by Queensland Urban Utilities."*

The primary driver of renewal has been demonstrated.

Decision making process

The Water Reticulation Mains Renewals Program is aimed at achieving an optimised level of service in the longer term within each of the water reticulation networks operated and maintained by Queensland Urban Utilities. There are a number of aspects to the program including the:

- Burst mains replacement sub program
- Critical mains replacement sub program
- Urban redevelopment/major roads/suburban centre improvements projects
- Potable water mains with diameters of 300 mm and below

The burst mains replacement sub program is aimed at managing the long term (30 year) burst rate. The program aims to ensure that the predicted increase in future burst rates is kept within the targets set by Queensland Urban Utilities. It is also aimed at preventing a situation where the burst rate increases above the target level and requires a large investment in a short time frame to improve the system burst rate.

The critical mains replacement sub program is aimed at replacing mains with a high burst rate, mains which cause multiple customer interruptions and unlined mains. Unlined mains do not meet the standard that all mains are to be lined.

No information is provided as to the aims and methodology of the urban redevelopment/major roads/suburban centre improvements and the potable water mains with diameters of 300 mm and below sub programs.

Capital expenditure is itemised for $7,422,000 of the $7,811,000 project budget for 2011/12 in the *Water Reticulations Mains Renewals Program List* as detailed in **Table 63**. The burst main replacement program contributes approximately 95 percent towards the required budget. Therefore, although limited information is provided for the urban redevelopment/major roads/suburban centre improvements and the potable water mains with diameters of 300 mm and below sub programs, this does not cause concern due to the low contribution of such to the overall project. Similarly, $325,000 that was committed in 2010/11 has been carried over into the 2011/12 budget. No information has been provided as to projects included in the budget. However, the funding carried

over from 2010/11 is four percent of the 2011/12 budget, and therefore the lack of information does not cause concern due to its low contribution to the overall project.

- **Table 63 Sub-program costs**

Sub-Program	Value ($)	Percentage (%)
Burst main replacement	7,037,000	95
Critical main replacement	0	0
Major roads	50,000	<1
Committed carryover from 2010/11 to be funded	325,000	4

During the development of the *Brisbane Water Maintenance Program Methodology* two operation and maintenance scenarios were examined being preventative maintenance and operate until failure. The description of these options as provided in the *Brisbane Water Maintenance Program Methodology* is:

1) Preventative maintenance – consisting of fixed time maintenance and/or condition based maintenance
2) Operate to failure – consisting of responsive maintenance and/or corrective maintenance

The preventative maintenance option was deemed to be unsuitable as the water reticulation system consists of a very large number of assets and therefore no preventative maintenance is undertaken to reduce the likelihood or consequences of this failure mode. There are a number of different expert techniques that can identify deterioration of a pipeline. However the water reticulation system consists of a very large number of assets and therefore determining the condition of each asset through a field assessment it not economical

In the 'operate to failure' option responsive maintenance sub option, when a water main fails, repairs are be completed to ensure the water main is fully functioning. In the corrective maintenance sub option a maintenance methodology is implemented, which ensures that the existing infrastructure is replaced or modified to reduce the likelihood of additional failures.

The corrective maintenance option has been adopted by Queensland Urban Utilities. This option is preferred as replacement or modification of the existing infrastructure reduces the consequences and/or likelihood of further failures on burst mains with significant risk.

The Brisbane Water Reticulation System Renewals Program assesses burst mains to be included in the maintenance methodology under the following social, customer and economic criteria:

- Four or more unplanned interruptions in a twelve month period
- Perpetual failures

    - 10 failures over a five to 10 year period
- Significant customer impact
    - Two failures with a significant damage to private property
    - Single interruption to a water critical customer
    - Number of customers interrupted on a single failure is greater than 200
- Publicity surrounding visible failures
    - Failure in the Central Business District
    - Major traffic disruptions
- Accessibility to maintain
- Environmental damage
- Excessive restoration costs
- Escalated level of customer complaint (Councillor/Lord Mayor)

The water mains nominated for replacement must also satisfy criteria under the Queensland Urban Utilities Corporate Policy for replacement. Under this policy, it must be demonstrated that it is more cost effective to replace the mains than to maintain them. This occurs when the annual burst repair cost for a section of main exceeds the discounted annual loan charges for a replacement main of the same diameter.

The replacement program evolves throughout the year to ensure emerging requirements are met. Maintenance planning continually monitors burst main activities. The maintenance plan is as follows:

- Monitor the performance of the burst mains: On a fortnightly basis the Maintenance Planning Section reviews the performance of every water main in the Brisbane area and identifies water mains that have experienced multiple interruptions
- Identify burst mains which meet the social, customer and economic criteria detailed above
- Review option to mitigate the risk including:
    - Replacing the water main
    - Inserting valves to reduce the number of customers impacted by the failure
    - Extension of mains to provide alternate supplies

The process is assessed as appropriate. The project has been assessed as prudent.

7.8.5. Efficiency

The scope of works

In 2011/12 projects will include:

- Replacement of burst water mains in various streets in all regions.
- Brisbane Kingsford Smith Drive stage 2 investigation and design works
- Relocation of water mains due to Main Roads projects
- Emergent works to address critical problems with water reticulation assets

Queensland Urban Utilities identified the replacement criteria, cost of repair and discounted annual loan charges of like for like replacement of the proposed burst mains. **Table 64** shows that the annual burst repair cost exceeds the discounted annual loan charges for the replacement of the reticulation mains for projects included in the *Queensland Urban Utilities Rehabilitation Submission for Rolling Program* (Project Reference No BDWDAA01 and BDWDAA01 – A06 (part 1)).

- **Table 64 Replacement cost, annual cost of repair and discounted annual loan charges for the burst main sub-program**

Address	Suburb	Replacement criteria	Length (m)	Cost of replacement ($000s)	Cost of repair in 12 months ($000s)	Discounted annual loan charges ($000s)
Elliot St	Banyo	Restoration Costs	467	774	11.5	10.3
Brooks St	Camp Hill	Restoration Costs	142	92	9.5	2.5
Pavonia St	Ashgrove	Perpetual Failure	158	138	15	2.7
Wynnum Esplanade	Wynnum	Customer Complaint	320	415	22	5.2
Wynnum Esplanade	Wynnum	Perpetual Failure	291	176	15.22	4.8
Frederick St	Northgate	4 bursts or more	348	120	10	5.6
Logan Road	Greenslopes	Perpetual Failure	246	254	14.5	6.9
Suelin St	Boondall	4 bursts or more	207	85	9.15	2.6
Boyland Ave	Coopers Plains	4 bursts or more	413	285	11.2	6.5
Blackmore St	Windsor	Restoration Costs	338	197	13.5	5.3
Sadlier St	Kedron	4 bursts or more	194	180	14.5	3.1

Address	Suburb	Replacement criteria	Length (m)	Cost of replacement ($000s)	Cost of repair in 12 months ($000s)	Discounted annual loan charges ($000s)
Susan St	Red Hill	Restoration Costs	202	142	14.2	3.2
Kent Rd	Wooloowin	4 bursts or more	306	185	21.5	5.6
Chadwick St	Tarragindi	4 bursts or more	178	102	23.5	3.3
Burdett St	Albion	4 bursts or more	343	240	21.18	6.2
Kent Rd	Wooloowin	4 bursts or more	414	260	22	7.6
Garema St	Indooroopilly	4 bursts or more	182	128	20.5	3.1
Park Rd	Wooloowin	4 bursts or more	422	249	17.2	6.7
Robinson Rd	Aspley	4 bursts or more	110	100	17.5	2.3
Creek Rd	Mount Gravatt East	4 bursts or more	194	144	21	3.8
Woonah Ave	Eagle Farm	2 Bursts/Yr – 300 main	123	220	21.9	4.2
Elliot St	Banyo	Restoration Costs	467	774	11.5	10.3
Total ($000s)				5,260	358	112

The list of projects may change during the financial year as higher priority mains are added to the program list and some mains are carried over into future years' rolling programs, hence the above table is not a complete list of projects planned for 2011/12.

The program size has increased over the years to maintain the overall performance of the water reticulation mains in the network and address the ageing asset base. In future years we would expect to see comparisons between previous expenditure and forecast expenditure. In addition we would also expect cost estimates for each for the mains replaced, compared with actual costs from the 2011/12 program. In addition, we would also expect to see a list of mains actually replaced in 2011/12 compared to those listed in the 2011/12 program.

Given the above information the scope of works is assessed as acceptable.

Standards of service

The Rehabilitation Submissions included in the request for information response identify that replacement of the water reticulation mains is to be performed according to the *Queensland Urban Utilities Water Supply and Sewerage Standards*.

Service standards as listed in the Queensland Urban Utilities Submission to the Authority relevant to the water reticulation system renewals program are:

- Less than or equal to eight water quality complaints per 1000 properties per year
- Less than or equal to 10 water quality incidents per 1000 properties per year
- Water pressure
  - Urban areas - minimum 210 kPa (kilopascals)
  - Trickle feed areas and private booster - minimum 100 kPa (kilopascals)
- Water volume
  - Urban areas – 25 litres per minute
  - Trickle feed areas – minimum 3.2 litres per minute
- Less than or equal to 100 unplanned water interruptions per 1000 connections per year
- Restoration of supply after unplanned interruptions within five hours on 90 percent of occasions

Network design standards are included in **Table 65** below.

Table 65 Queensland Urban Utilities water supply network design standards

Measure	Planning criteria (qualitative standards)	Design criteria (qualitative standards)
Quality of supply	Provide a uniform water quality in accordance with recognised standards that safeguards community health and is free from objectionable taste and odour.	The Australian Drinking Water Guidelines developed by the National Health and Medical Research Council
Pressure and leakage management	The water supply network is monitored and managed to maintain the reliability and adequacy of supply and to minimise environmental impacts.	System Leakage Management Plan (Chapter 3, Part 3, Division 1A Water Act 2000)
Infrastructure design/planning standards	Design of the water supply network will comply with established codes and standards.	▪ Water Supply Code of Australia— Water Services Association of Australia— WSA 03–2002 ▪ The Australian Drinking Water Guidelines developed by the National Health and Medical Research Council ▪ Planning Guidelines for Water Supply and Sewerage— Department of Natural Resources and Water (NRW) ▪ Local government standards in planning scheme policies
Quality of supply	Provide a uniform water quality in accordance with recognised standards that safeguards community health and is free from objectionable taste and odour.	The Australian Drinking Water Guidelines developed by the National Health and Medical Research Council

These standards are similar to those of the other SEQ water retail businesses. We consider them to be reasonable.

Project cost

Different asset management processes are employed to establish program funding levels and identify and prioritise individual projects within the sub programs including:

- Statistical modelling/scenario planning (CSIRO PARMS PLANNING Statistical Model)
- Financial analysis
- Monitoring consequence of failures

The statistical modelling/scenario planning is used to set the funding level for the program, financial analysis provides a direct cost comparison between solutions and consequence monitoring is used to identify and prioritise individual assets for inclusion in the critical mains replacement program.

For the Brisbane Water Reticulation System Program, the CSIRO PARMS PLANNING statistical model is used in planning the investment stream. This model was first up in 2006 to use data from 2001 to 2006 and has not since been updated. Prioritisation methodology software used in Brisbane is the Ellipse Enterprise Resource Planning software.

The CSIRO PARMS PLANNING statistical model was used to determine the long term burst rate from 2007 – 2036 based on expenditure levels of between $2 million and $18 million per annum. The modelling results indicate that the required expenditure to control the long term burst rate in Brisbane to the KPI target is likely to be between $16.5 and $18 million per year (2006 dollars). The modelling results also indicated that it will be less likely that the burst rate will be able to be controlled within the KPI target in the short term if expenditure is not increased.

Project costs presented in the Water Reticulation Mains Renewals Program List are a combination of pre-market cost estimates and post-market costs of the renewal works. The pre-market cost estimates are developed utilising the costing tool (Brisbane Summary of Rates Costing Document), which was provided in Queensland Urban Utilities response to a request for information, along with recent rates from Diona, Brisbane City Works, and Comdain.

Given the processes for determining project cost described above the project cost is reasonable. However, we note that CSIRO PARMS PLANNING statistical model utilises data from the 2001-2006 period, and has not been updated since 2006. We acknowledge that Queensland Urban Utilities plans to implement the PARMS Priority software, in addition to updating the CSIRO PARMS PLANNING model in the 2011/12 financial year to:

- Cater for changing climatic conditions

- Cater for increased failure data history
- Cater for updated maintenance, replacement and social costs
- Cater for implementation of pressure management

We recommend that the Authority investigates the progress of these updates in future Price Monitoring reviews, and reviews any changes to future capital expenditure requirements that may arise from more up to date modelling software.

7.8.6. Timing and Deliverability

There are no defined project management plans outlining how the program will be delivered. However there is some evidence that the works will be completed through the panel of approved water main renewal contractors. The Rehabilitation Submission for the Rolling Program does identify the risk of projects changing over the financial year as higher priority mains are added to the program list, causing some mains to be carried over into future years rolling programs.

No assessment as to the likelihood of the project being delivered within the timeframe (i.e., the 2011/12 financial year) is provided. The Queensland Urban Utilities submission included evidence that the program from 2010/11 was not fully delivered, however no information as to the progress achieved in the 2010/11 year has been provided. The program is flexible, and as higher priority mains are identified for replacement, the program list is likely to change.

Given the lack of a project management plan, and uncertainty surrounding the selection of mains for replacement for the whole of 2011/12, there is insufficient information to assess the ability of Queensland Urban Utilities to deliver the program in 2011/12.

7.8.7. Efficiency Gains

No information has been provided with regard to efficiency gains in this project.

7.8.8. Allocation of overhead costs

No budget has been included for the allocation of overhead costs. We expect that these costs would be included in the corporate costs budget.

7.8.9. Policies and procedures

Compliance with the Authority's initiatives is summarised in **Table 66** below.

- **Table 66 Brisbane Water System Renewals Program - compliance with the Authority's initiatives**

Initiative	Achievement Yes/No/Partial	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole of entity) perspective	Yes	The program is operated from a network area perspective, in which the Brisbane, Ipswich, Scenic Rim, Somerset and Lockyer Valley networks are considered separately.

A standardised approach to cost estimating, including a standardised approach to estimates for items such as contingency, preliminary and general items, design fees and contractor margins, so that there is uniformity of cost estimating across all proposed major projects	Yes	Costing documents have been provided including calculation template, contractor rates and Brisbane City Council rates. These include:
		▪ Business Case for Water Reticulation Systems Renewal Program
		▪ 2011/2012 Capital Investment Program Renewals Project Summaries: Renewals Projects
		▪ 2011/2012 Capital Investment Program Support Services Project Summaries
		▪ Water Reticulation Mains Renewals Program, Program List
		▪ Costing Documents
		  ▪ Costing tool (Brisbane Summary of Rates Costing Document)
		  ▪ Contractor rates
		▪ Rehabilitation Submissions for Rolling Program, Project Reference No BDWDAA01

A summary document to be prepared for identified major projects so as to facilitate standardised reporting	Yes	▪ 2011-12 6 Month Project Delivery List ▪ Rehabilitation Submissions for Rolling Program, Project Reference No BDWDAA01
An implementation strategy to be developed for each major project that includes recommendation on delivery methodology, program and a risk review process	Yes	▪ Business Case for Water Reticulation Systems Renewal Program ▪ 2011/2012 Capital Investment Program Renewals Project Summaries: Renewals Projects ▪ 2011/2012 Capital Investment Program Support Services Project Summaries ▪ Rehabilitation Submissions for Rolling Program, Project Reference No BDWDAA01
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	No	No information of review to be undertaken has been provided

7.8.10. Summary

The aim of the Brisbane Water Reticulation System Renewals Program in 2011/12 is to achieve an optimal level of service in the longer term within the Brisbane water reticulation network. This optimal level of service is achieved through sub programs including:

- Burst mains replacement
- Critical mains replacement
- Urban redevelopment/major roads/suburban centre improvements projects
- Potable water mains with diameters of 300 mm and below

The Brisbane Water Reticulation System Renewals Program has been assessed as prudent. The prudency driver of renewal has been demonstrated. A functioning water reticulation system is vital to Queensland Urban Utilities' ability to deliver quality to customers, and the method for selecting mains for replacement utilises reasonable criteria. However, as stated above, we recommend the Authority reviews the progress Queensland Urban Utilities is making in updating the CSIRO PARMS PLANNING model and any changes to future capital expenditure requirements resulting from the upgrades.

The Brisbane Water Reticulation System Renewals Program has been assessed as efficient. An appropriate scope of works, acceptable standards of service and reasonable project cost have been demonstrated. The information provided regarding delivery does not enable comprehensive assessment. The costs provided in the 2011/12 Information Template to the Authority are lower than those detailed in the project business case. Since the costs detailed in the project business case are based on pre-market estimates calculated from recent market rates, or from tendered or contracted values for program elements, we consider them to be efficient and hence recommend that the 2011/12 Information Template be updated with the business case costs as outlined in Table 67 below.

- **Table 67 Brisbane Water Reticulation System Renewals Program - revised capital expenditure profile**

	Costs ($000s)			
Project	**2011-12**	**2012-13**	**2013-14**	**Total**
Brisbane Water Reticulation System Renewals Program	7,811	12,000	16,000	35,811

Value to expenditure not considered to be prudent or efficient – NIL.

7.9. Brisbane Wastewater Treatment Flood Recovery

7.9.1. Proposed capital expenditure

Table 68 shows the proposed cost of the Brisbane Wastewater Treatment Flood Recovery within the 2011/12 to 2013/14 budgets.

- **Table 68 Proposed capital expenditure profile - Brisbane Wastewater Treatment Flood Recovery**

	Costs ($000s)			
Source	**2011-12**	**2012-13**	**2013-14**	**Total**
2011/12 Information Template	6,674	-	-	6,674
Asset Recovery Costs based on Fairfield, Oxley and Karana Downs Capital Costs only	6,674	-	-	6,674
2011/12 Capital Investment Program Project Summaries: Renewals Projects[1]	8,731	-	-	8,731
Document Supported Scope of Works and Cost Breakdown for Oxley Water Reclamation Plant	-	-	-	9,782

1. Costs include ADWDAA13, - Water Distribution Flood Recovery, AWWCAA13 - Wastewater Transport Flood Recovery, AWWTAA04 - Wastewater Treatment Flood Recovery, AFLTAA02 - Fleet Flood Recovery

The costs presented in the supporting documentation do not agree with the costs in Queensland Urban Utilities 2011/12 Information Submission to the Authority.

7.9.2. Project description

Queensland Urban Utilities' objectives are to deliver drinking water, recycled water and sewerage services to the cities and townships within the boundaries of the Brisbane and Ipswich City Councils and Lockyer Valley, Scenic Rim and Somerset Regional Councils. As such, it is Queensland Urban Utilities' responsibility to maintain, manage and operate the wastewater treatment plants within these catchments.

In January 2011, the SEQ floods caused major damage throughout the Queensland Urban Utilities' catchment areas, including impacting water reclamation plants. The water reclamation plants that were affected in the Brisbane area include Oxley Water Reclamation Plant, Fairfield Water Reclamation Plant and Karana Downs Water Reclamation Plant. In response to the damage, Queensland Urban Utilities had to restore operation to these assets in a timely fashion.

The Authority's sample for this project is only for capital costs at Oxley Water Reclamation Plant, Fairfield Water Reclamation Plant and Karana Downs Water Reclamation Plant.

7.9.3. Provided documentation

The key reference documents used for this review are:

- *2011/12 Capital Investment Program Project Summaries: Renewals Projects*, Queensland Urban Utilities, February 2011
- *Queensland Urban Utilities Information Return 2011/12*, Queensland Urban Utilities, August 2011
- *Sole Submission Oxley Creek Water Reclamation Plant Thermal Hydrolysis (CAMBI) and Digestion. Post Market: Flood Recovery, Pre-Market: Heat Exchanger Enhancement (John Holland)*, Queensland Urban Utilities, 7 June 2011
- *Increase Contract Expenditure Authority*, Queensland Urban Utilities, 13 September 2011
- *Emergency Exemption Submission Sole Source, Oxley Creek Water Reclamation Plant Electrical Recovery (Nilsen Qld Pty Ltd)*, Queensland Urban Utilities, 31 March 2011
- *Emergency Exemption Submission Sole Source, Oxley Creek Water Reclamation Plant Control & Instrumentation Recovery (MPA Engineering Pty Ltd)*, Queensland Urban Utilities, 4 May 2011
- *Emergency Exemption Submission Oxley Creek Water Reclamation Plant Dewatering & Clarification Recovery (Aquatec Maxcon)*, Queensland Urban Utilities, 26 August 2011
- *Sole Source Purchase for Phase 2 Flood Recovery, Oxley Creek Water Reclamation Plant, Odour Control Units*, Queensland Urban Utilities, 26 March 2011
- *Sole Source Purchase for the Provision of Oxley Creek Water Reclamation Plant (WRP) UV Disinfection Facility Refurbishment*, Queensland Urban Utilities, 26 July 2011
- *Flood Recovery Phase 2 – Water Reclamation Plants (Oxley Creek WRP) Technical Specification*, Queensland Urban Utilities, 15 August 2011

7.9.4. Prudency

Cost driver

The nominated cost driver for this project by Queensland Urban Utilities was renewal.

The conclusion that this project is driven by renewals is supported by the following:

- The project involves the replacement of flood damaged assets located within all three water reclamation plants
- In Section 8.1.4 of its 2011/12 Information Return Queensland Urban Utilities states: *"The capital replacement costs that have resulted from the floods are assigned to the renewals category in the QCA data template"*

We consider that renewal should be the primary driver as the non-compliance only arose as a result of plant failure.

Decision making process

As this project was initiated in response to a natural disaster, normally paced decision procedures were not applied.

The Queensland Urban Utilities strategies to recover the plants were as follows:

- Manage the work on a site by site basis
- Separate the larger sites into 'work zones' ie Oxley Water Reclamation Plant
- Engage specialist contract resources under emergent procurement terms to recover the equipment within the work zones
- Utilise internal subject matter experts to coordinate the interaction between the contractors, process requirements and operations

The implementation of this strategy during the months following the floods, were split into two phases; Phase 1 was 'Pure Emergency Environment' and Phase 2 was 'Managed Emergency Environment'.

No NPV calculation was undertaken given the 'emergency' state of the scope of works required. Based on the documentation received, a 10 percent contingency was applied to the majority of the costs.

We have assessed the project as being prudent.

7.9.5. Efficiency

The scope of works

Phase 1, 'Pure Emergency Environment' focused on establishing critical services within the shortest time periods possible. These services included:

- Site utilities, safety and security
- Process power
- Primary treatment
- Base communications

Phase 2 'Managed Emergency Environment' focused on establishing 'manual' licence compliance within a period of 10 weeks to restore the plants to pre-flood operational status. The scope assigned a contractor a specific area of the plant with the desired outcome being the restoration of all the equipment within their specified jurisdiction back to a fully operational state.

Standards of service

In terms of the Queensland Urban Utilities Infrastructure Delivery, this project relates to "Infrastructure Delivery Program" which is:

> *"Enabling initiatives to deliver a standardised infrastructure architecture to support business operations and delivery".*

This project was to maintain an existing standard (pre-floods) of service with like for like replacement.

Project cost

The capital expenditure information received summarised the capital costs that were necessary for replacement of most of the damaged assets at Oxley Water Reclamation Plant. No plant item capital cost information was received for either Karana Downs Water Reclamation Plant or Fairfield Water Reclamation Plant, although a list of the damaged assets at Karana Downs Water Reclamation Plant and Fairfield Water Reclamation Plant was provided by Queensland Urban Utilities.

Table 69 summarises the scope of works and capital costs submitted by Queensland Urban Utilities for Oxley Water Reclamation Plant.

- **Table 69 Document supported scope of works and cost breakdown for Oxley Water Reclamation Plant**

Scope of Works		Capital Costs ($)	
Description	**Company**	**Cost**	**Total**
CAMBI – Thermal Hydrolysis Plant	John Holland		3,641,902
Stage 1 (Test)		601,766	
Stage 2 (Recover)		3,040,136	
Odour Control Units	Aromatrix		588,349
Odour Control Units		458,948	
Odour catalyst replacement		59,900	
Missing pipes, fittings, instruments, media waste disposal		21,460	
10% contingency		48,041	
UV System & Service Water Pumps	ITT Flygt		759,000
Replacement		690,000	
10% contingency		69,000	
Instrumentation & Control	MPA Engineering Pty Ltd		2,459,258
Phase 1		379,733	
Phase 2		1,793,632	
Provisional (for supply of critical spares)		105,893	
10% contingency		180,000	

Scope of Works		Capital Costs ($)	
Description	Company	Cost	Total
Electrical	Nilsen		1,785,502
Phase 1		519,599	
Phase 2		1,150,903	
10% contingency		115,000	
Dewatering and Clarification	Aquatec Maxcon		494,876
Phase 1		339,765	
Phase 2		141,111	
10% contingency		14,000	
Compressors and Blowers	CAPS		53,641
Phase 2		48,765	
10% contingency		4,876	
Total			9,782,529

Information on the scope of works and the relative capital cost expenditure were not provided for the following:

- Chemical dosing plants, contractor: Alldos/Grundfos
- Westfalia centrifuge, contractor: Westfalia
- Alfa Laval centrifuge, contractor: Alfa Laval
- HST blowers, contractor: ABS

Upon our request, Queensland Urban Utilities provided a detailed breakdown of the quotes from the following vendors:

- John Holland offer (preliminary offer, before the increase of capital costs)
- MPA Engineering offer
- Nilsen offer

These summaries validate the $7.8 million expenditure as the assets replaced, the costs of labour and the new equipment are all listed.

In addition, two quotes that were submitted with the above works under ‘Thermal Hydrolysis (CAMBI) and Digestion’, this included:

- Heat exchanger enhancement, contractor: John Holland at $ 893,000
- Increase of CAMBI budget, contractor: John Holland for $ 1,889,871

It is stated in the *Sole Submission Oxley Creek Water Reclamation Plant Thermal Hydrolysis (CAMBI) and Digestion* that the heat exchanger was an aspect of CAMBI process previously

identified as a 'bottleneck' and its enhancement was an approved minor capital project in 2009. This project was also entered into the 2010/11 capital program for delivery in 2010/11. We have been advised that the heat exchanger enhancement works have not been included in the flood recovery capital cost.

The increase in the capital costs of the CAMBI budget was stated in Queensland Urban Utilities' document *Increase Contract Expenditure Authority* and the costs are shown in **Table 70**

- **Table 70 Queensland Urban Utilities increase for CAMBI capital expenditure**

Description	Original Estimate	Confirmed Price ($)		Variance ($)	Comments
		Maintenance Budget	Flood Recovery		
Mobilisation/Site Management	1,545,136		1,545,136		
Cogeneration	300,000			- 300,000	Initial estimate obtained from Clarke Energy. Scope removed from project to go to open market as separate package. ($1,391,641 actual cost submitted)
Boiler Repair	144,000		320,945	176,945	Initial estimate obtained from RCR
CAMBI & Digester Increase	407,000		1,444,314	1,037,314	Damage higher than initially estimated
Pulper Pump Replacement	115,000		111,425	- 3,575	
CAMBI Maintenance	279,000	184,170		- 94,830	
Gas Compressors	300,000			- 300,000	Removed from scope
Gallery Switch Board Replacement			315,960	315,960	Confirmation was required during Stage 1 as to the future of this board
Inclusion of the Metal Salts Area			270,841	270,841	Included due to location of equipment
Additional Equipment identified as not fit for purpose.			584,309	584,309	Clarification from insurance is currently being sort for recovery of this funding.
Total Process recommissioning			77,908	77,908	
Contingency			125,000	125,000	2.5%[9]

[9] It is our assumption that this is 2.5% of the rounded total "Confirmed Price" (both Maintenance Budget and Flood Recovery

Description	Original Estimate	Confirmed Price ($)		Variance ($)	Comments
		Maintenance Budget	Flood Recovery		
Total	3,090,136	184,000	4,795,838	1,889,872	
		4,980,008			

The item 'CAMBI and Digester increase' is $ 1,037,314 and throughout the documentation, there is no information provided as to the change of scope.

A majority of the costs and contractors have been procured through *Emergency Exemption Submission for Sole Source* as under the Queensland Urban Utilities Procurement Manual "*where urgency and prior documented knowledge of the circumstance deem only one organisation or consultancy or contractor appropriate for the task"*. The documentation provided (for Oxley Water Reclamation Plant) often indicates the rationale for sole sourcing with the specific contractor was; "*an established provider to QUU that undertakes maintenance across the WRP Asset Base*", with the exemption of the CAMBI replacement by John Holland. For the procurement of John Holland's services, sole sourcing was justified under "*Part 4, Item 1.11... where specialist expertise is required and only one organisation can provide it to the required standard*".

We consider that Queensland Urban Utilities use of sole sourcing to be reasonable.

Based on the expenditure details contained in documentation provided, the Oxley Water Reclamation Plant has a budget of $14,342,000, with the overall Flood Recovery (for both financial years 2010/11 and 2011/12) budget of $15,810,000. The budget for the plants is shown in **Table 71**.

- **Table 71 Summary of Capital Allocation per Water Reclamation Plant**

Water Reclamation Plant	Budget 10/11 ($000s)	% of Budget 10/11	Budget 11/12 ($000s)	% of Budget 11/12	Total Capital Expenditure ($000s)
Oxley	8,530	93	5,812	87	14,342
Karana Downs	511	6	368	6	879
Fairfield	95	1	494	7	589
Total	9,136	100	6,674	100	15,810

No capital costs have been provided for Karana Downs Water Reclamation Plant or Fairfield Water Reclamation Plant, however a summary of the damaged assets were provided for both plants. As such, the efficiency of the project costs can only be based on Oxley Water Reclamation Plant, which is 87 percent of the total budget allocated for the 2011/12 financial year. As per **Table 69**,

$12.5 million costs have been procured for Oxley Water Reclamation Plant with a provision of a budget of $14.3 million.

Queensland Urban Utilities has provided a summary of the assets that were delivered in Phase 1 and Phase 2 at Oxley Water Reclamation Plant and this is found in Section 7.9.6.

The project has been assessed as efficient.

7.9.6. Timing and Deliverability

Based on the documentation received by us, the timing and deliverability of assets across all the Brisbane assets were as follows:

- Phase 1 - occurred in the period immediately after Queensland Urban Utilities obtained access to site
- Phase 2 - implementation commenced in the second week of recovery

However, based on further information received, the delivery of the assets in Oxley WRP was separated into three different stages:

- Effluent chain replaced and running in manual operation (as a minimum) to meet licence conditions (January 2011 to April 2011).
  - Inlet pump station
  - Screens area
  - Anaerobic tank
  - Bioreactors 5 & 6
  - Final settling Tanks 9, 10, 11 & 1
  - Blowers 8, 9, 10,11 & 12
  - Return Activated Sludge pumps
  - Waste Activated Sludge pumps
  - Belt Filter Press 1 & 2
  - Final area including disinfection
- Intermittent works by MPA Engineering Pty (Instrumentation and Control) and Nilsen (Electrica) to modify the emergency works into a ‘permanent reliable fix’ (April to September 2011)
- Sludge storage and drying areas (September 2011 onward)
  - Sludge import
  - Centrifuge (x2)

- Dewatering waste activated sludge storage
- CAMBI
- Digesters
- Gas flare
- Sludge export

Upon request, the delivery dates for the works undertaken in Fairfield and Karana Downs Water Reclamation Plants for the financial year 2010/11 were provided, with comments on the 'remaining works' with the proposed delivery of the assets to be within the financial year 2011/12.

The timing and delivery of the flood affected assets are considered reasonable.

7.9.7. Efficiency Gains

The capital expenditure on new assets will result in an extension of asset life and based on the replacement of like for like, but with newer equipment, it is expected that there would be a reduction in operating costs.

7.9.8. Allocation of overhead costs

Not applicable as no overheads are allocated.

7.9.9. Policies and procedures

Compliance with the Authority's initiatives is summarised in **Table 72** below.

- **Table 72 Brisbane Wastewater Treatment Flood Recovery - compliance with the Authority's initiatives**

Initiative	Achievement Yes/No/Partial	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole of entity) perspective	Yes	For a budget of $15 million, costs were provided for $12 million and the costs are prudent and efficient based on the emergency nature of the project.
A standardised approach to cost estimating, including a standardised approach to estimates for items such as contingency, preliminary and general items, design fees and contractor margins, so that there is uniformity of cost estimating across all proposed major projects	Partial	A 10 percent contingency was applied for a majority of the assets that were purchased for Oxley Water Reclamation Plant, however as no cost breakdowns were provided for Karana Downs and Fairfield Water Reclamation Plants, no assessment can be made.

Initiative	Achievement Yes/No/Partial	Comment
A summary document to be prepared for identified major projects so as to facilitate standardised reporting	Yes	Documentation provided confirming the specific projects that have been delivered within the 2010/11 financial year and the projects that are to be delivered within the 2011/12 financial year.
An implementation strategy to be developed for each major project that includes recommendation on delivery methodology, program and a risk review process	Yes	As above
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	No	As this project was done in a state of "emergency" post floods, the review that was done internally based on documentation provided, seem adequate.

7.9.10. Summary

The Brisbane Wastewater Treatment Flood Recovery 2011/12 is a continuation of a project that started in 2010/11 for the replacement of flood damaged assets after the devastating January 2011 SEQ floods.

The project has been assessed as prudent. We consider that renewal is the primary driver with legal (compliance) a secondary driver.

The scope of work costs were based on assessment of flood damaged infrastructure at the three sites. The scope of works needed by Fairfield Water Reclamation Plant and Karana Downs Water Reclamation Plant were provided, but the detailed capital expenditure was not. However, together the capital expenditure for these later two plants is approximately seven percent of the 2010/11 budget and 13 percent of the 2011/12 budget.

The project has been assessed as efficient. An appropriate scope of works, acceptable standards of service, reasonable projects costs and achievable delivery have been demonstrated.

Value of expenditure not considered to be prudent or efficient – NIL.

7.10. Fleet Replacement Program

7.10.1. Proposed capital expenditure

Table 73 shows the proposed cost of the Fleet Replacement Program within the 2011/12 to 2013/14 budgets.

- **Table 73 Fleet Replacement Program – proposed capital expenditure profile**

	Costs ($000s)			
Source	**2011-12**	**2012-13**	**2013-14**	**Total**
Regulatory Submission to the Authority	6,000	4,162	4,383	15,545
Fleet Replacement Justification	4,217	Rolling program	Rolling program	Rolling program
Support Services Project Summaries	6,000	Rolling program	Rolling program	Rolling program
Fleet Replacement Justification Replacement of vehicles and plant three year plan to June 2015	$4,704	$5,218	$3,463	13,385

The project costs provided in the submission to the Authority differs to the cost provided in the supporting documentation. The costs provided in the *Fleet Replacement Justification* include justification for expenditure from the 2011/12, 2012/13 and 2013/14 periods.

7.10.2. Project description

Queensland Urban Utilities has adopted fleet management guidelines currently used by Brisbane City Council Fleet Product Group. The Fleet Replacement Group provides fleet services to Queensland Urban Utilities under a transitional service agreement. They provide a *Five year Capital Expenditure report*, which outlines all vehicles, plant and equipment due for replacement in each of the forthcoming years.

The aim of setting replacement parameters is to maintain an efficient and effective vehicle fleet by ensuring that vehicles are replaced by following optimum replacement cycles. This should ensure that vehicles remain financially viable for the business and operate efficiently with minimum down time caused by mechanical failures.

The Queensland Urban Utilities *Fleet Replacement Justification* states that Fleet Replacement Group replacement parameters are based on the following pre-determined effective lives:

- Light passenger vehicles 3 years or 60,000 km
- Commercial vans 4 years or 100,000 km
- Trucks 7 years or 175,000 km
- Plant 7 years or 8,000 hrs
- Category 3 equipment as required

Further, the *Fleet Replacement Justification* states the Fleet Replacement Group reviews the costs and benefits of its recommended fleet replacement lives, to ensure optimum replacement cycles. Factors the Fleet Replacement Group consider that impact an asset's serviceable life include:

- Nature of the asset – has an influence on its length of service
- Maintenance costs – costs increase with age
- Compliance with legislation
- New technology – resale value drops rapidly when items are superseded
- Compatibility of item with new/changed working environment
- Asset environment – physical conditions in which the asset operates
- Change to excise tax – e.g., fuel rebates for class of vehicle

No budget was allocated in the 2010/11 financial year to the fleet replacement schedule. Queensland Urban Utilities proposes that the 2011/12 budget covers the purchase of fleet due for replacement in 2011/12 in addition to overdue fleet items from the 2010/11 schedule.

Fleet replacement is like-for-like, except where the previous model is no longer available, in which case the replacement would be the closest like-for-like specification or where there has been a change in the nature of the work performed by the asset requiring a vehicle of a different specification.

7.10.3. Provided documentation

The key reference documents used for this review are:

- *Fleet Replacement Justification Replacement of vehicles and plant budget 2011-12*, Queensland Urban Utilities, 16 September 2011
- *Capital Budget 2011-12, Fleet Replacement*, Queensland Urban Utilities, 22 February 2011
- *2011/2012 Capital Investment Program, Support Services Project Summaries*, Queensland Urban Utilities, 12 January 2011
- *RFI response*, QUU Ref: RFI 0008 – QUUR01
- *Fleet Replacement Justification Replacement of vehicles and plant three year plan to June 2015*, Queensland Urban Utilities, 28 October 2011

7.10.4. Prudency

The *Fleet Replacement Justification* states that degradation of assets (in this case fleet) results in lost productivity in other operational areas, along with higher maintenance and repair costs. There are also higher risks for workplace health and safety as the fleet gets older and less reliable. Failure to meet legislative/ service delivery requirements can have a negative impact on Queensland Urban Utilities reputation.

Cost driver

Cost drivers for this project are not nominated by Queensland Urban Utilities in terms of legal obligation, growth, renewal or improvement. The *Fleet Replacement Justification* states that:

> *"timely replacement is critical best practice for fleet as it affects vehicle and equipment availability, safety, reliability and operating costs"*.

Considering Queensland Urban Utilities justification we assess renewal to be the cost driver for this project. The primary driver of renewal has been demonstrated.

Decision making process

Development of the fleet renewal project has been conducted in accordance with the Brisbane City Council Fleet Product Group as described in Section 7.10.2. In determining the appropriate course of action, Queensland Urban Utilities analysed three alternatives.

Alternative 1: Replace only priority one and two items on 2010/11 replacement schedule and carry over the remainder. Capital budget required for 2011/12 would be $3,060,000 with potential salvage value of $745,000.

Alternative 2: Replace all fleet items identified in 2010/11 replacement schedule in 2011/12 and carry over 2011/12 to future years. Capital budget requirements for 2011/12 would be $5,971,000 with potential salvage value of $1,472,000.

Alternative 3: Adopt a new fleet management guideline to extend replacement life. Extend replacement life to:

- Light passenger vehicles 4 years or 80,000 km
- Commercial vans 5 years or 125,000 km
- Trucks 8 years or 200,000 km
- Plant 8 years or 9,000 hrs
- Category 3 equipment as required

Queensland Urban Utilities identifies the benefit of the above alternatives as reducing the capital expenditure in 2011/12. However, the reduction in capital expenditure in 2011/12 represented by these alternatives does not represent a saving in the long term and merely defers capital costs into future years. The Fleet Replacement Group advises against attempts to extend the life of an asset beyond predetermined effective life parameters for short term capital benefit. It further states that deferred capital cost does not come without a considerable level of pain in the overall management of fleet.

Queensland Urban Utilities identifies a number of risks associated with deferring capital expenditure on replacement of fleet including:

- Service delivery/continuity of service issues, if critical vehicles are off-line
- Increased operational costs
  - 10 percent increase on standard servicing costs for each year deferred for passenger vehicles and 20 percent for trucks
  - Higher cost of repair for per kilometre (especially for brakes, drive belts etc)
  - External hire costs to replace critical vehicles that are off-line
- High 'out of warranty' repair costs
- Higher changeover costs of fleet
  - Higher purchase cost in future year for replacement vehicle
  - Significantly lower salvage price for the replaced vehicle
- Increased downtime; reduced reliability leads to decreased performance statistics
- Aging fleet impacts customer perceptions/reputation

We agree with the above assessment and concur that deferral of capital costs in this instance will lead to increased operating costs that are likely to outweigh any benefit of deferral.

Queensland Urban Utilities does not see the alternatives as viable as adoption of any of them will simply delay the capital expenditure and potentially increase operating costs in the short term. Therefore the preferred option identified by Queensland Urban Utilities is to adopt the Fleet Replacement Group replacement schedules.

The project has been assessed as prudent. The primary driver of renewal has been demonstrated.

7.10.5. Efficiency

The scope of works

The scope of works for Queensland Urban Utilities preferred option is to replace all vehicles that have exceeded the Fleet Replacement Group replacement parameter (as provided in Section 7.10.2). The replacement of fleet will occur in order of priority with priority one being highest and therefore being replaced first.

Priority one vehicles are those that pose an operational risk to the business if removed from service. Priority two vehicles are those that are overdue for replacement by distance and age that have high maintenance costs but do not pose operational risk if removed from service temporarily and priority three vehicles are those that are overdue for replacement by distance and age but are performing well with no major maintenance or safety risks.

Completing the fleet replacements that were due to occur in 2010/11 will result in 181 assets being replaced while 86 fleet items are due for replacement in 2011/12. Each of the vehicles listed for replacement in the *Fleet Replacement Justification* in the 2011/12 budget have a replacement date within the 2011/12 financial year or earlier. The *Fleet Replacement Justification Replacement of vehicles and plant three year plan to June 2015* provides a list of fleet assets to be replaced in 2012/13 and 2013/14 and approximate replacement costs.

In comparison Unitywater has identified the following benchmarks for vehicle replacement, which are similar to those adopted by Queensland Urban Utilities:

- Passenger vehicles 3 years or 80,000 km
- Utilities and commercials 4 years or 100,000 km
- Trucks up to 15 GVM 6 years or 150,000 km
- Trucks over 15 GVM 8 years or 200,000 km

Considering the above information we assess the scope of work for 2011/12 to be appropriate.

Standards of service

The impacts of not replacing vehicles as per the Fleet Replacement Group replacement parameters include:

- Failure to meet performance targets
- Inability to meet legislative obligations
- Increased maintenance/ repair costs
- Risk to Queensland Urban Utilities reputation
- Added safety/risk of aging fleet
- Unable to take up safety/ environmental initiatives as quickly as possible

Completing the fleet replacement program as per Fleet Replacement Group replacement parameters will reduce the likelihood of these impacts occurring.

Project cost

The project costs are based on completing the fleet replacement from 2010/11 in addition to replacing fleet that is due for replacement in the 2011/12 financial year. These costs are summarised below in **Table 74**.

- **Table 74 Fleet replacement costs for 2011/12 to 2013/14**

Heading	20110/11	2011/12	2012/13	2013/14
Number of assets	181	85	101	108
Fleet replacement cost	$10,188,000 (2010/11 and 2011/12)		$4,704,000	$5,218,000
Fleet salvage value	$2,246,000 (2010/11 and 2011/12)		$1,034,00	$1,147,000
Net cost for fleet replacement	$7,942,000 (2010/11 and 2011/12)		$3,670,000	$4,071,000

A comparison has been made of Queensland Urban Utilities fleet replacement costs against vehicle costs sourced from the manufactures Australian websites in **Table 75**. This comparison shows that the costs provided by Queensland Urban Utilities are generally lower than the costs listed on the vehicle manufactures website.

- **Table 75 Comparison of vehicle costs**

Make	Model	Year	Fleet Replacement Justification Cost ($)	Drive away purchase cost (from manufactures website) ($)	Difference (%)
Toyota	Corolla Conquest	2007	21,641	24,236.37	-11
Holden	Barina TK	2007	21,641	19,990	8
Ford	Falcon BF	2006	24,424	36,252	-33
Toyota	Hilux SR	2008	28,201	30,206.77	-7
Mercedes Benz	Vito 115	2007	37,995	38,990	-3
Toyota	Hiace	2006	37,995	43,703.37	-13

Allowing for a discount for the large number of vehicles that Queensland Urban Utilities is purchasing, the vehicle costs for the project for the 2010/11 and 2011/12 years are efficient. Specific types of replacement vehicles are not provided for all assets to be replaced in 2012/13 and 2013/14 in the *Fleet Replacement Justification Replacement of vehicles and plant three year plan to June 2015*. However, when making a comparison between general vehicle types, the Queensland Urban Utilities vehicle replacement costs for 2012/13 and 2013/14 are reasonable as shown in **Table 76**.

- **Table 76 Comparison of vehicle replacement costs for 2012/13 and 2013/14**

Make	Model	Type	Drive away purchase cost (from manufactures website)	Fleet Replacement Justification 2012/13 replacement cost	Fleet Replacement Justification 2013/14 Replacement Cost
Toyota	Corolla Conquest	5 door auto hatch	$24,236.37	$21,500	$21,500
Holden	Barina TK	Auto hatch	$19,990	$21,500	$21,500
Ford	Falcon BF	V6 auto sedan	$36,252	$30,500	N/A*
Toyota	Hilux SR	SR Hilux Dual Cab	$30,206.77	$28,400	$28,400
Mercedes Benz	Vito 115	T/Diesel auto van (LWB)	$38,990	$36,900 - $67,900	$36,900
Toyota	Hiace	Van	$43,703.37	$36,900 - $67,900	$36,900

* We were unable to determine if these vehicles were included in the replacement schedule for this year

A comparison of salvage values provided in the *Fleet Replacement Justification* and our market research is provided in **Table 77**.

- **Table 77 Comparison of vehicle salvage value**

Make	Model	Year	Fleet Replacement Justification Salvage Value ($)	SKM Sourced Resale value ($)	Difference (%)
Toyota	Corolla Conquest	2007	6,252	11,300 - 13,200	45 to 52
Holden	Barina TK	2007	6,252	5,600 - 7,100	-12 to 12
Ford	Falcon BF	2006	10,292	6,100 - 7,700	-69 to -34
Toyota	Hilux SR	2008	10,400	11,300 - 13,400	8 to 22
Mercedes Benz	Vito 115	2007	8,000	23,600 - 26,900	66 to 70
Toyota	Hiace	2006	8,000	20,500 - 23,400	61 to 66

Queensland Urban Utilities reduced the estimated salvage value provided by the Fleet Product Group by 20 percent for each fleet asset to reflect the age and condition of fleet assets. This conservative approach has led to the salvage values expected from the *Fleet Replacement Justification* to be lower that our salvage values for most items. Considering that 85 of the 266 fleet assets are due for replacement in 2011/12, we do not consider such a course application of the 20 percent discount to be reasonable.

The salvage values provided for the Vito 115 and Hiace were between 30 percent and 40 percent of the expected range. The *Fleet Replacement Justification* identifies two Hiace and 1 Vito that are

due for replacement, which will result in a maximum variation of approximately $50,000 from the salvage value identified by Queensland Urban Utilities. In the context of the $10,188,000 budget of the project the potential $50,000 variation is insignificant. However, in future reviews we suggest that more specific information is provided as to the age and condition of assets to allow a more thorough examination of vehicle salvage values.

7.10.6. Timing and Deliverability

The target date for completion varies between vehicles, depending on the original purchase date. The preferred option is for all fleet identified as being past the replacement date to be replaced within the 2011/12 financial year. A schedule has been provided which outlines the replacement dates for fleet.

We conclude that the timeline for vehicle replacement proposed by Queensland Urban Utilities is achievable within the 2011/12 financial year.

7.10.7. Efficiency Gains

The *Feet Replacement Justification* identifies potential efficiency gains for the Fleet Replacement Program through:

- Prioritising replacements for those fleet items that must be replaced/have highest impact if not replaced. This will achieve savings in operational costs for maintenance/repairs
- Continual review and monitoring of asset replacement benchmarks for non-critical impact fleet items without compromising continuity of service/reputation
- Implementing better utilisation of fleet by investigating:
  - Introduction of log books
  - Reduction of home garaging
  - Improved car pooling
  - Reduction in use of hire vehicles
- Implementation of global positioning system tracking in all Queensland Urban Utilities vehicles (as already instigated in Service Delivery East fleet)
- Continuous negotiations/management of Transitional Service Agreement with sourcing provider (Fleet Replacement Group)

Additionally, as detailed previously, completing vehicle replacements as per the Fleet Replacement Group replacement parameters will ensure that future operational expenses are not incurred due to aging fleet.

7.10.8. Allocation of overhead costs

No budget has been included for the allocation of overhead costs. We expect that these costs would be included in the corporate costs budget.

7.10.9. Policies and procedures

Compliance with the Authority's initiatives is summarised in **Table 78** below.

Table 78 Fleet Replacement Program - compliance with the Authority's initiatives

Initiative	Achievement Yes/No/Partial	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole of entity) perspective	Yes	The Fleet Replacement Justification documents the costs/benefits to Queensland Urban Utilities of the options for fleet replacement.
A standardised approach to cost estimating, including a standardised approach to estimates for items such as contingency, preliminary and general items, design fees and contractor margins, so that there is uniformity of cost estimating across all proposed major projects	Yes	Cost estimates for vehicle replacements and estimates of salvage value have been obtained from the same source.
A summary document to be prepared for identified major projects so as to facilitate standardised reporting	Yes	▪ Fleet Replacement Justification Replacement of vehicles and plant budget 2011-12, Queensland Urban Utilities, 16/09/2011 ▪ Capital Budget 2011-12, Fleet Replacement, Queensland Urban Utilities, 22/02/2011 ▪ 2011/2012 Capital Investment Program, Support Services Project Summaries, Queensland Urban Utilities, 12/01/2011
An implementation strategy to be developed for each major project that includes recommendation on delivery methodology, program and a risk review process	Partial	Implementation has been discussed indirectly in the Fleet Replacement Justification report.
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	No	No information of review to be undertaken has been provided

7.10.10. Summary

The fleet replacement will replace fleet that have exceeded the benchmark triggers for replacement adopted by Queensland Urban Utilities including:

- Light passenger vehicles 3 years or 60,000 km
- Commercial vans 4 years or 100,000 km
- Trucks 7 years or 175,000 km
- Plant 7 years or 8,000 hrs
- Category 3 equipment as required

The project has been assessed as prudent. Without the project Queensland Urban Utilities fleet decline in quality. The decline in quality will affect the ability of Queensland Urban Utilities to fulfil its role and may result in increase operational maintenance costs.

The project has been assessed as efficient for 2011/12 (which includes the 2011/12 and 2010/11 fleet replacement), 2012/13 and 2013/14 financial years. The *Fleet Replacement Justification Replacement of vehicles and plant three year plan to June 2015* provides the most detailed costs estimates for the 2012/13 and 2013/14 fleet replacement and has therefore been included in the revised capital expenditure profile below.

The capital expenditure profile included in **Table 79** below is the net capital (ie replacement cost less salvage value) detailed by Queensland Urban Utilities for fleet replacement.

- **Table 79 Fleet Replacement Program - revised capital expenditure profile**

	Costs ($000s)			
Project	2011-12	2012-13	2013-14	Total
Queensland Urban Utilities Fleet Replacement	$7,942	$3,670	$4,071	$15,683

7.11. Auchenflower Branch Sewer Upgrade

7.11.1. Proposed capital expenditure

Table 80 shows the proposed cost of the Auchenflower Branch Sewer Upgrade Project within the 2011/12 to 2013/14 budgets.

- **Table 80 Auchenflower Branch Sewer Upgrade Project – Proposed capital expenditure profile**

	Costs ($000s)			
Source	2011-12	2012-13	2013-14	Total
2011/12 Information Template	5,510	-	-	5,510
2011/12 Capital Investment Program Project Summaries: Enhance Projects	5,510	-	-	5,510

The information provided in the 2011/12 Information Template submitted to the Authority for the 2011/12 to 2013/14 financial years agrees with the information provided in the project summary.

7.11.2. Project description

The Auchenflower Branch Sewer Upgrade Project involves the construction of a 306 m long, 400 mm diameter vitrified clay and a 573 m long, 600 mm diameter vitrified clay gravity sewer main from Torwood Street to Coronation Drive along Torwood Street, through Milton Park, along Eagle Terrace, Roy St, and Lang Parade. This new sewer will augment the existing sewer which is to be retained and relined, as part of this project, to ensure that it continues to operate reliably into the future.

The existing unreinforced concrete Auchenflower branch sewer commences at Haig Road and generally follows low lying terrain southward to the Brisbane River. The sewer was constructed over 70 years ago and CCTV inspections indicate that it is in fair to poor condition. The route of the existing sewer traverses highly developed, high density residential and commercial areas, which have experienced significant population growth in recent years.

Master Planning has identified the existing Auchenflower branch sewer as being under capacity for peak wet weather flow conditions and the sewer has been observed to overflow from the existing overflow structure under these conditions.

7.11.3. Provided documentation

The key reference documents used for this review are:

- *2011/12 Capital Investment Program Project Summaries: Enhance Projects*, Queensland Urban Utilities, February 2011
- *Auchenflower Branch Sewer Upgrade Feasibility Report*, MWH & Brisbane Water, September 2008
- *Submission Re: Post Market Submission for the Construction of the Auchenflower Branch Sewer Upgrade between Haig Road and Coronation Drive and Associated Works RFO Number C1011-010*, Queensland Urban Utilities, 18 November 2010
- *Submission Re: Approve the Contract Award for the Auchenflower Branch Sewer Upgrade*, Queensland Urban Utilities, 8 December 2010
- *QUU 2011 Proposed Capital Works Review Part B - Review of Capital Projects*, Beca, August 2011

7.11.4. Prudency

Cost driver

The primary cost driver nominated in the *2011/12 Capital Investment Program Project Summaries: Enhance Projects* for this project is growth. Within the *Commissioning Model 5yrs.xls* provided by Queensland Urban Utilities in place of the Authority's template spreadsheet the expenditure drivers are 50 percent growth and 50 percent renewal.

The growth cost driver is supported by population forecasts in the *Auchenflower Branch Sewer Upgrade Feasibility Report*.

This report identifies that just relining the existing main would address the structural issues of the main however it does not increase the hydraulic capacity, ie the relined sewer main would have insufficient capacity to adequately handle existing and future peak wet weather flow conditions. Population projections for the Auchenflower branch sewer catchment are outlined below in **Table 81**.

- **Table 81 Population projections for the Auchenflower branch sewer catchment**

Planning Case	2016 (EP)	2016 (EP)	Ultimate (EP)	Ultimate Flow (L/s)*
Business as Usual (BAU)	13,603	13,667	14,032	194.88
Alternative Planning Case (AP)#	13,603	15,596	17,889	248.46

*Peak wet weather flow; # The Alternative Planning Case (AP) considers demand from future Transit Orientated Development and is a higher population projection than the Business as Usual (BAU) case.
Note: Extract from *Auchenflower Branch Sewer Upgrade Feasibility Report* (MWH & Brisbane Water, 2008)

Modelling of the Auchenflower sewer catchment, in MOUSE, was conducted for a previous study (*Brisbane Water Wet Weather Modelling Project – Phase 2 Long Time Series Modelling & Business as Usual Report*, MWH, 2007). The results of the modelling indicated that the system tends to overflow during storm events greater than about one in six month average recurrence interval.

Other cost drivers identified include renewal and legal obligation (compliance). These are supported by:

- The *Auchenflower Branch Sewer Upgrade Feasibility Report*, which states that:
  - the existing sewer system is under capacity during peak wet weather flows and overflows have been observed during wet weather events
  - the existing branch sewer is over 70 years old and recent camera inspections have shown that the sewer is showing signs of structural deterioration and is well beyond expected service life
- Environmental obligations to be met in relation to licence conditions regarding eliminating or reducing sewage overflows and odours from the affected line

- Customer Standards of Services for wastewater networks to be achieved and maintained

Supplementary documentation provided by Queensland Urban Utilities states *"It is important to note that population growth is not the dominant driver for this project"* (*Response to RFI 0004*, Queensland Urban Utilities 2011). Given this and other information, renewal appears to be the main driver for this project, with growth as a secondary driver.

We recommend that Queensland Urban Utilities reviews and confirms the cost drivers assigned to this project and revise the apportioning of expenditure to the cost drivers within their commissioning model.

The project has been assessed as prudent. The drivers of growth and renewal are appropriate. The proportion allocated to each needs to be confirmed.

Decision making process

A number of options were initially assessed using multi criteria assessment methodology involving both qualitative assessment and financial assessment. Ten main options were considered, these were:

Option 1	Do nothing
Option 2	The existing sewer is abandoned and replaced by a new sewer
Option 3	Reline the existing sewer
Option 4	Pipe bursting is used to enlarge and reline the existing sewer
Option 5	Reline the existing sewer and construct a high level relief sewer that will unload the existing sewer during peak wet weather flows
Option 6	Reline the existing sewer and construct a low level augmentation that will split the flow between the new augmentation and the existing sewer
Option 7	Reline the existing sewer and construct a new wet weather pump station and rising main that will unload the sewer downstream of the pump station
Option 8a	Construct an attenuating storage at Gregory Park and reline the existing downstream sewer
Option 8b	Construct an attenuating storage at Milton Park, reline the existing downstream sewer and increase capacity of the existing upstream sewer
Option 8c	Construct an attenuating storage at Dunmore Park, reline the existing downstream sewer and increase capacity of the existing upstream sewer
Option 9	Construct a sewer mining, treatment, effluent storage and disposal system to unload the existing sewer. The existing sewer would also need to be relined

Option 10 Undertake Inflow/Infiltration works upstream of the Auchenflower Branch Sewer. Reduction of inflow and infiltration into the sewer would reduce wet weather flows and effectively unload the sewer

For each option initially a non-financial assessment was undertaken including technical, environmental, community and social, operation and maintenance impact and risk assessment analysis. An economic assessment with a capital costs and a net present value assessment evaluation was then completed. The results of the assessment were combined in the multi criteria options analysis.

The preferred option from the multi criteria analysis was Option 4. This was the most economic option with the lowest capital cost and minimal ongoing operation and maintenance costs. Option 4 was chosen as it represented a cost effective alternative that would be highly reliable and consistent with identified potential future works downstream. It allows the existing sewer to be rehabilitated in a manner that minimises the social and environmental disruption that would otherwise be required by other options.

Following the selection of the preferred option investigation works were undertaken to prove project constraints from a construction perspective. During this stage a number of constraints to pipe bursting were identified, including:

- An off-set manhole where the actual manhole is under a large box culvert which cannot be accessed for pipe bursting (Camford St)
- Insufficient space to insert pipe bursting equipment from the Kilroy St end
- Proximity to the foundations of a house (Torwood St)
- Potential for significant public inconvenience particularly at Torwood and Lang Parade, arising from the scale of excavation required to reconnect the existing reticulation sewers back to the new trunk sewer
- Potential for significant public inconvenience arising from the long trenching required before each manhole particularly at deep manholes from Roe St to Lang Parade

Further options analysis was undertaken subsequent to the selection of the initial preferred option to take into account increased understanding of the project construction risks. A multi-criteria evaluation taking into consideration three different construction options, micro-tunnelling only, pipe bursting followed by micro-tunnelling and two iterations of pipe bursting followed by micro-tunnelling. A multi-criteria evaluation was performed to provide appropriate rigour to the selection of the final construction methodology. The preferred option, micro-tunnelling, has been chosen as it was highest ranked from the analysis with minimal disruptions and risks. No net present value analysis has been provided for this options analysis.

In summary, the Auchenflower branch sewer is an essential component in the S1 sewer catchment and measures to ensure that network integrity is guaranteed are essential. We are satisfied that Queensland Urban Utilities has undertaken a thorough options analysis, which included the analysis of a 'do nothing' option and the consideration of risk and financial analysis.

The project has been assessed as prudent.

7.11.5. Efficiency

The scope of works

The construction of a new 600 mm diameter vitrified clay gravity sewer using micro-tunnelling techniques from Haig Rd and Frew St Junction to Coronation Drive. This new sewer will augment the existing 450 mm diameter Auchenflower sewer which is to be retained and relined to allow it to operate reliably into the future. The project deliverable is the completion of the construction works within the 2011/12 financial year.

The scope of works is appropriate.

Standards of service

As this project was initiated under Brisbane Water (Brisbane City Council) it is supported by Brisbane Water documentation. This project is supported by:

- Outcomes of the 'S1 Sewerage Master Planning investigation'
- Satisfying Council's Corporate Plan in regard to the provision of infrastructure for water and waste water services (Outcome 2.3), through Service 2.3.1.5 "City Development"
- Strategy 4 Water for Today and Tomorrow (an Integrated Water Management Strategy for Brisbane) in regard to managing water that meets our social obligation, ensuring that public health is not compromised and reducing overflows from the sewer system
- WCM001 – Water Cycle Management Policy, Outcome 4: Management Water to meet our social obligations
- In accordance with Brisbane Water's guideline, 'Planning Guidelines for Sewerage', works will comply with the design criteria as follows:
    - Sewer systems shall be sized to cater for a design peak wet weather flow (PWWF) of:
        - Where the trunk sewer serves populations < 100,000 equivalent persons (EP), a design flow of 1,200 L/EP/d is to be assumed (this approximates 5 x average dry weather flow (ADWF))
        - Where the trunk sewer serves populations > 100,000 EP, a design flow of 1,000 L/EP/d is to be assumed (this approximates 4 x ADWF)

- Maximum sewer capacity shall be taken as that of the sewer flowing full with no surcharge at design PWWF
- Localised surcharging (where HGL at design PWWF does not rise more than 0.5 m above pipe obvert) is acceptable in existing trunk sewers provided it does not have an adverse impact on connections and does not result in either controlled or uncontrolled overflows
- The desirable design velocity range should be from 0.9 - 2.0 m/s
- The desirable minimum design velocity at peak dry weather flow (PDWF) should be 0.6 m/s
- Ideally, rising mains should operate between velocities of 1 m/s and 1.5 m/s. The maximum and minimum permitted velocities are 0.6 m/s to 3.0 m/s respectively

The standards of service used are appropriate.

Project cost

A contract for the works for the new main as part of the Auchenflower Branch Sewer Upgrade project was put to tender via public advertisement following the Queensland Urban Utilities procurement strategy. Seven offers were received and assessed by a panel using normalised prices and non-price weighted evaluation criteria, including service and delivery requirements. A value for money index calculated by dividing the sum of the non-price weighted scores by the normalised prices.

A summary of the cost estimate is included in **Table 82**.

- **Table 82 Auchenflower Branch Sewer Upgrade – Project cost breakdown**

Project Cost Summary Level		Contract Commitment ($)	Expected Total Cost of Project ($)	Percentage (%)
1	Design and documentation of Contract specifications and RFT		560,295	6.1
2	This proposed Contract	6,181,346	6,181,346	66.8
3	Other proposed Contracts required to deliver the overall Project Communication Consultant		66,500	0.7
4	QUU Operational Support costs		96,000	1.0
5	Project Mgt and Commercial Services		425,924	4.6
6	Project contingency (not including contingency for this Contract)		400,000	4.3
7	Contract contingency sum (This proposed Contract)	930,000	930,000	10.0
8	Relining of the old sewer (yet to be contracted)		600,000	6.5
TOTAL		7,111,346	9,260,065	

Project Cost Summary Level	Contract Commitment ($)	Expected Total Cost of Project ($)	Percentage (%)
LESS Prior Financial Years' Expenditure (Note: this value is not shown in 2011/12 Capital investment Program Project Summaries: Enhance Projects)		-549,019	
SUB-TOTAL (2010/11 and 2011/12 expenditure)		8,711,46	

Note: Extract from *Response to RFI 0004* (Queensland Urban Utilities, 2011)

We assess that the percentages used for estimating the operational support, contingency etc are reasonable.

The costs indicated by Queensland Urban Utilities for the new sewer main have been arrived at through competitive tender market values, and therefore as such are believed to accurately represent the current market value of the proposed project. This tender process involved seven tenders costing all of the proposed works. Based on the information provided, we understand that the price for the works ranged from $5 million to $12 million. The preferred tenderer selected by Queensland Urban Utilities was within the lower region of this range, with a price of $6.18 million. We have not reviewed the original tender documents. No information has been provided in relation to the costs associated with the relining of the existing sewer, apart for the estimate in **Table 82**.

Based on the information provided we conclude that the costs are efficient. All elements of the project have been competitively tendered and that the costs for the work are consistent with conditions prevailing in the markets.

7.11.6. Timing and Deliverability

The project is being delivered by contractors under the Queensland Urban Utilities Major Projects and Commercial Services Branch. A Project Management Plan has been developed for the delivery of the project. This includes the scope, cost management, risk management, communication plan and project schedule. Risk principles have been incorporated in the project design.

Risks have been identified and mitigation strategies proposed. Queensland Urban Utilities advises that the project risks will be managed throughout the lifespan of this project by continually reviewing risk, using proactive mitigation strategies and monitoring residual risk.

It has been estimated that the project will take 14 months to complete from date of commencement. The Letter of Acceptance was issued 9 December 2010. According to the project milestones the construction of the project is expected to be completed by February 2012, however advice from Queensland Urban Utilities indicates that practical completion is currently scheduled for 16 December 2011.

We conclude that this project can be delivered within the project timelines.

7.11.7. Efficiency Gains

No efficiency gains have been identified for this project.

7.11.8. Allocation of overhead costs

Not applicable as no overheads have been allocated.

7.11.9. Policies and procedures

Compliance with the Authority's initiatives is summarised in **Table 83** below.

Table 83 Auchenflower Branch Sewer Upgrade Project - compliance with the Authority's initiatives

Initiative	Achievement Yes/No/Partial	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole of entity) perspective	N/A	This is not applicable to this project due the localised nature of the scheme.
A standardised approach to cost estimating, including a standardised approach to estimates for items such as contingency, preliminary and general items, design fees and contractor margins, so that there is uniformity of cost estimating across all proposed major projects	Partial	MWH was engaged to conduct a Feasibility Assessment. As part of this an estimate of costs was developed.
A summary document to be prepared for identified major projects so as to facilitate standardised reporting	Yes	A standardised summary document has been provided for the project.
An implementation strategy to be developed for each major project that includes recommendation on delivery methodology, program and a risk review process	Yes	A Project Management Plan has been provided for the delivery of the project.
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	Partial	Queensland Urban Utilities has a 'gateway' review process which is mentioned in some documentation however specific information is not provided for all stages.

7.11.10. Summary

The Auchenflower Branch Sewer Upgrade Project is an essential component of the S1 sewerage catchment and measures to ensure that network integrity is guaranteed are essential.

The project has been assessed as prudent. It is necessary under the growth and renewal cost drivers. This is based on the condition assessment of the existing asset, as well as the criticality of the asset to Queensland Urban Utilities' ability to fulfil its operating requirements. The costs of the project indicate that the construction of the new sewer main comprises approximately 67 percent of the total costs of the project with the relining work estimated at only 6.5 percent. Based on this break down we advise that Queensland Urban Utilities revises the percentage allocation to expenditure driver within their *Commissioning Model 5yrs.xls* to 90 percent growth and 10 percent renewal.

The project is found to be efficient because the scope of works meets the needs of the project and the costs are in line with market rates, the delivery program is achievable and the standards of service used are appropriate.

Value of expenditure not considered to be prudent or efficient – NIL.

7.12. Canungra Water Reclamation Plant Upgrade

7.12.1. Proposed capital expenditure

Table 84 shows the proposed cost of the Canungra Water Reclamation Plant Upgrade within the 2011/12 to 2013/14 budgets.

- **Table 84 Canungra Water Reclamation Plant Upgrade – Proposed capital expenditure profile**

	Costs ($000s)			
Source	**2011-12**	**2012-13**	**2013-14**	**Total**
2011/12 Information Template	3,345	-	-	3,345
Queensland Urban Utilities Capital Investment Program – Enhance Project Summaries 2011/2012	3,345	-	-	3,345
Queensland Urban Utilities Post Market and Funding Increase (01/09/2010)	4,085	-	-	4,085

The costs presented in the supporting documentation do not agree with the costs in Queensland Urban Utilities' 2011/12 Information Template submitted to the Authority.

7.12.2. Project description

The Queensland Urban Utilities asset, Canungra Water Reclamation Plant currently services approximately 900 EP within the Scenic Rim Shire. Queensland Urban Utilities states that the

existing plant meets its current license condition for effluent quality based on monthly grab samples – median total nitrogen of 20 mg/L and total phosphorous of 8 mg/L, but due to the limited capacity, the plant exceeds the maximum daily dry weather flow limits.

There has also been a development application for a new development (224 new lots) that would be adjacent to the Canungra Water Reclamation Plant. This development along with the population projection of the Scenic Rim Shire; may increase in population to approximately 1500 EP by 2018. The Canungra Water Reclamation Plant upgrade will respond to this growth and will also aim to meet more stringent license conditions for their effluent quality – median total nitrogen of 5 mg/L and total phosphorous of 1 mg/L, and a total maximum daily dry weather flow of 900 kL.

The scope of works for this upgrade is implemented a 'design and construct' contract at the existing Canungra Water Reclamation Plant site (a 'Brownfield site').

7.12.3. Provided documentation

The key reference documents used for this review are:

- *Canungra STP – Capacity Upgrade, Technical Specification Revision V4*, Queensland Urban Utilities, 24 October 2010
- *Canungra Wastewater Study, Planning Report Revision 2*, Cardno, 24 May 2007
- *Canungra Sewage Treatment Plant, Master Plan – Phase 1 (Existing Plant and Site Capacity Assessment), Revision 2*, Tyr Group, 21 October 2007
- *Post Market and Funding Increase Submission: Design and Construction of Canungra Wastewater Treatment Plant Upgrade*, Queensland Urban Utilities, 1 August 2010
- *QUU 2011/12 Capital Investment Program: Enhance Project Summaries*, Queensland Urban Utilities, 17 February 2011
- *QUU Nominal Asset Lives for use in Economic Regulation to Depreciate at the Asset Class Level*, 28 March 2011
- *Queensland Urban Utilities Information Return 2011/12*, Queensland Urban Utilities, August 2011

7.12.4. Prudency

Cost driver

The nominated cost driver in the Queensland Urban Utilities submission for this project is growth.

Their conclusion that this project is driven by growth is supported by the following:

- Population growth as calculated by Cardno in their planning study. They created a population projection that conformed to the growth based on the Southeast Queensland Regional Plan and their own assumptions, which are as follows:
  - 2.6 EP per newly developed lot (for the new 224 lot development)
  - The catchment will have conventional gravity system sewers for all existing sewers, and smart wastewater systems for all new sewers.
  - A wastewater flowrate of 180 litres per EP per day (L/EP/d) for the projections

Secondary project drivers of compliance and renewal are also justified.

The assessment of the compliance driver is based on the following:

- The effluent discharge conditions of monthly sample with median total nitrogen of 20 mg/L and median total phosphorous of 8 mg/L are only applicable with the current Canungra Licence. Once the development approval for the Water Reclamation Plant has been approved, a new licence will be issued. Our experience with Department of Environmental Resource Management recent licence conditions (for another Water Reclamation Plant owned by Queensland Urban Utilities) is that new licence will be at minimum, a median total nitrogen of 3 mg/L and a median total phosphorous of 1 mg/L

For the driver of renewal, the assessment is based on the following:

- Canungra Water Reclamation Plant was established in the 1970s and with Queensland Urban Utilities 'Nominal Asset Lives for use in Economic Regulation to Depreciate at the Asset Class Level' and based on the asset life for Wastewater Treatment Plants, 25 years, Canungra Water Reclamation Plant would have been due for an upgrade regardless of population growth

Therefore the project driver growth is the primary driver. Queensland Urban Utilities may wish to include the subordinate drivers of compliance and renewal and allocate a portion of expenditure to these drivers.

Decision making process

The solution that has been developed is documented the following reports/planning studies:

- *Canungra STP – Capacity Upgrade, Technical Specification* (Queensland Urban Utilities, 2010)
- *Canungra Wastewater Study, Planning Report* (Cardno Pty Ltd, 2007)
- *Canungra Sewage Treatment Plant, Master Plan – Phase 1 (Existing Plant and Site Capacity Assessment)* (Tyr Group Pty Ltd, 2007)

The 'do nothing' option was not investigated by any of the above mentioned parties. We understand that both the Cardno Report and Tyr Study were completed before the formation of Queensland Urban Utilities and therefore, there may not be a consistency in the decision making process between Scenic Rim Regional Council and Queensland Urban Utilities.

The Cardno Report did not conduct an options analysis. Instead, they recommended an 'overall concept' of a 'preferred upgrade' which was the inclusion of Biological Nutrient Removal into the process and the potential use of the existing infrastructure on site.

The Tyr Study considered the following options to meet the projected flow for 2036 (2992 EP):

1) Retention of the existing secondary treatment process in its current configuration, and operating at a process sludge age of 16 days. Additional plant stage configured as a conventional biological nutrient removal process
2) Augmentation of the existing secondary treatment process with an additional anaerobic or anoxic tank and secondary clarifier. Additional plant stage configured as conventional biological nutrient removal process
3) Replacement of the existing plant with a conventional biological nutrient removal process
4) Replacement of the existing plant with a membrane bioreactor

The recommendation by the Tyr Study was the *"replacement of the existing Canungra STP at a new site with a buffer zone of at least 300 m"* as being the *"most effective option for managing the increased sewage loads"*. However, the Tyr Study also recommends that *"if no suitable site can be located, it is technically feasible to augment the plant to achieve the necessary capacity within the existing site"* with the additional recommendation of odour control facilities.

The Cardno Report provided a capital cost estimate for the 'preferred upgrade' of Canungra and the scope of works is shown in **Table 85**:

Table 85 Cardno Estimated Sewage Treatment Upgrade Costs

Works Item	Capital Cost Estimate ($)
Stage I (Year 2008)	
Install mechanical screen	100,000
Construct an anoxic bioreactor	150,000
Refurbish Imhoff tank	70,000
Cover the existing drying beds (or install Geotubes[10])	33,000 (30,000)

[10] Based on the Tencate Geotubes(R) website (http://www.tencate.com/5626/TenCate/TenCate-Industrial-Fabrics/Region-North-America/en/Region-North-America-en-Industrial-Fabrics/Geotube-Dewatering/How-It-Works) are large tubes that filter sludge and run on a cycle of fill with sludge, dewater (effluent water

Works Item	Capital Cost Estimate ($)
Activated sludge pump upgrade	40,000
Hydraulic assessment of all pipe work and units	10,000
Aerator control	7,000
Stage II (Year 2016)	
Assess and change sludge pump	20,000
Construct new drying beds	80,000
Stage III (Year 2023)	
Assess and (possibly) change Sludge pump	20,000
Total	**530,000**

No net present value calculations were completed for either planning report. However, the final scope of works (*Queensland Urban Utilities Technical Specification*) was implemented as a Design and Construct contract and submitted to tender on 24th May 2010. A tender evaluation was completed on the four 'shortlisted' submissions based on the following criteria:

- Non price weighted evaluation criteria
  - Competency (40%)
  - Personnel, Industrial Relations, Workplace Health & Safety (25%)
  - Goods and Services Quality (20%)
  - Financial/Commercial (10%)
  - Quality Assurance and Environment (5%)
- 'Value for Money Index' evaluation methodology – a 'Value for Money Index' is calculated for each shortlist tenderer by dividing the sum of the non-price weighted scores by the tendered prices

A summary of these findings are found in **Table 86**

drains from the Geotubes) and finally, consolidate (the sludge becomes more dense – a reduction of 90%) and dispose.

- **Table 86 Tenderer's and their respective prices.**

Tenderer	Originally offered price ($)	Revised negotiated price	Value for Money Index
Aquatec Maxcon Pty Ltd	[redacted]	5,971,196	[redacted]

Tenderer	Originally offered price ($)	Revised negotiated price	Value for Money Index
[redacted]	[redacted]	[redacted]	[redacted]

Tenderer	Originally offered price ($)	Revised negotiated price	Value for Money Index
[redacted]	[redacted]	[redacted]	[redacted]

Tenderer	Originally offered price ($)	Revised negotiated price	Value for Money Index
[redacted]	[redacted]	[redacted]	

An options investigation has been completed. Notwithstanding that the original cost estimates were inadequate and incorrect; the tendering process has produced relevant original cost information.

Based on the information provided, we feel that the Canungra Water Reclamation Plant upgrade is a prudent project.

18.1.1. Efficiency

The scope of works

The process scope of works that were submitted for the final design and construct contract are as follows:

- Inlet works including fine screening, screening collection, washing, dewatering and storage
- Wet weather bypass including emergency bar screen, washing, dewatering and storage
- Grit removal, washing, dewatering and storage
- 5 Stage Bardenpho bioreactor (using existing carousel bioreactor with new scum harvester, standby surface aerators & associated instrumentation)
- Ultraviolet disinfection system
- Sludge thickening, dewatering and out load facility
- Alum dosing facility for complimentary phosphorous removal
- Service water pumping station
- Return activated sludge and waste activated sludge pumping systems
- Inclusion of laboratory and other amenities
- All associated mechanical, civil, electrical and instrumentation attached to these works

These are assessed as appropriate for the selected option.

Standards of service

Based on Queensland Urban Utilities *Wastewater network desired standards of service*, this project directly relates to the following measures:

- Reliability – all development has access to a reliable wastewater collection, conveyance, treatment and disposal system

- Quality of Treatment – ensures the health of the community and the safe and appropriate level of treatment and disposal of treated effluent
- Environmental impacts – the environmental impacts of the wastewater network are minimised in accordance with community expectations

The design standards of service, documented in the cost driver section of this review, are generally in accordance with industry practice. The use of the generation rate of 180 L/EP/day is slightly lower than the contemporary rate for SEQ urban areas as this is a regional area, this reduced rate is regarded as acceptable.

Project cost

Upon request, a detailed breakdown was provided by Queensland Urban Utilities stating the cost breakdown for the design and construct contract. A summary of the costs are as follows:

- **Table 87 Summary of Aquatec Maxcon design and construct tender**

[redacted]

[redacted]		[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]		[redacted]
Total		[redacted]	**5,971,196**

The negotiated tender had a saving of [redacted] A Probity Advisor (Willis Consulting Group Pty Ltd) was engaged to oversee the negotiation stage on the basis of the high project value and associated risk exposure. The Probity Advisor confirmed that no known probity issues compromised the tender evaluation. The evaluation of the cost breakdown seems reasonable and as Queensland Urban Utilities went to tender for the Canungra Water Reclamation Plant upgrade, market values for construction costs were sought and confirmed. This project is therefore assessed as efficient.

19.1.1. Timing and Deliverability

The project schedule was provided upon request and the process proving of the newly constructed plant is between December 2011 and June 2012.

This milestone is achievable.

19.1.2. Efficiency Gains

As mentioned previously, the drivers for this work include a requirement to replace the assets due to the asset life of a wastewater treatment plant (25 years) being exceeded. The replacement and refurbishment of Canungra Water Reclamation Plant is necessary and the new works associated with the upgrade will achieve an extension of asset life.

19.1.3. Allocation of overhead costs

Not applicable as no overheads are allocated.

19.1.4. Policies and procedures

Compliance with the Authority's initiatives is summarised in **Table 88** below.

- **Table 88 Canungra Water Reclamation Plant Upgrade - compliance with the Authority's initiatives**

Initiative	Achievement Yes/No/Partial	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole of entity) perspective	Yes	Directly relates to upgrading water reclamation plants from the Western footprint of Queensland Urban Utilities assets. This is an upgrade that has been planned since 2007.
A standardised approach to cost estimating, including a standardised approach to estimates for items such as contingency, preliminary and general items, design fees and contractor margins, so that there is uniformity of cost estimating across all proposed major projects	Yes	As this project went to tender, the tender evaluation provided the cost approach. The cost breakdown of Aquatec Maxcon's offer is shown in Table 87.
A summary document to be prepared for identified major projects so as to facilitate standardised reporting	Yes	Queensland Urban Utilities 2011/12 Capital Investment Program: Enhance Project Summaries
An implementation strategy to be developed for each major project that includes recommendation on delivery methodology, program and a risk review process	No	No specific strategy provided
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	Yes	As part of the review process, the following have been completed: ▪ 2x planning studies, ▪ A request for tender (24/04/2010 – 21/05/2010) with detailed tender specification ▪ Tender evaluation by 5 Queensland Urban Utilities officers and probity advisor This is capable gateway review.

19.1.5. Summary

The Canungra Water Reclamation Plant upgrade for 2011/12 is a continuation of a project that was started in 2010/11.

The project has been assessed as prudent. The upgrade is necessary, with the primary driver of growth and subordinate drivers of renewal and compliance. The Scenic Rim Region has been identified as an area of future growth, the Canungra Water Reclamation Plant was originally constructed in the 1970s (therefore, surpassing its 25 year asset life) and finally, the Canungra Water Reclamation Plant has regularly been exceeding its maximum dry weather flow due to a lack of capacity.

The project has been assessed as efficient. An appropriate scope of works, acceptable standards of service, reasonable project costs and achievable delivery have been demonstrated.

Value of expenditure not considered to be prudent or efficient – NIL.

19.2. Toowong Sewers Upgrade

19.2.1. Proposed capital expenditure

Table 89 reports the proposed capital expenditure of the Toowong Sewers Upgrade Project within the 2011/12 to 2013/14 budgets.

- **Table 89 Toowong Sewers Upgrade Project – Proposed capital expenditure profile**

	Costs ($000s)			
Source	**2011-12**	**2012-13**	**2013-14**	**Total**
Regulatory Submission to the Authority	4,982	-	-	4,982
Feasibility Report	-	-	-	5,165
Pre-Market Submission	4,982	-	-	4,982
Post-Market Submission	-	-	-	5,328*

* Cost based on Contract value

The details contained in the previous table are all consistent and the largest value is eight percent greater than the price submitted to the Authority.

19.2.2. Project description

The proposed project is to construct an interceptor sewer in order to provide additional capacity to the sewerage network. The scheme will transfer part of the flows from the existing Toowong catchment to the Sylvan Rd catchment, from Lissner Street to Sylvan Road. The project allows for the construction of 647 m of 300 mm diameter sewer. In addition it is proposed that the existing sewers be re-lined in order to extend their design life.

The *S1 Sewerage Catchment Master Planning Investigation – Review 2006* reported that a section of the existing Toowong pipework is under-sized as it can only transfer flows in the range 2.5 – 3 ADWF (not 5 ADWF as per the design guidelines). Additionally there is planned growth in the catchment that will increase the population from 4501 EP to 6429 EP. The growth will further compound the existing lack of capacity in the network.

19.2.3. Provided documentation

The key reference documents used for this review are as follows:

- *Toowong Sewers Upgrade – Feasibility Report Rev.1*, Brisbane City Council, 23 July 2009
- *Pre-Market Submission*, Queensland Urban Utilities, 20 April 2011
- *Post-Market Submission*, Queensland Urban Utilities, 25 August 2011

- *Proposed Capital Works Review Part B – Review of Capital Projects Rev.2*, Beca, 8 August 2011

19.2.4. Prudency

Cost driver

The cost drivers and their relative percentages of the budget that have been nominated by Queensland Urban Utilities are:

- 50 percent growth
- 50 percent renewal

Renewal has not been demonstrated as a project driver as this relates to works to replace currently time expired asset that if operating to its design specification would be compliant. As the works are to enhance a section of sewerage network that is currently under the required capacity then renewal cannot be a project driver.

The following are the cost drivers for this project as listed in the *Feasibility Report*:

- Ensure the sewerage network has sufficient capacity to meet the requirements of the *Environmental Protection Act 1994* in order to manage the risk of uncontrolled spills
- Ensure that the network complies with Brisbane City Council Water Distribution's *Services Planning Process* with respect to regulatory, strategic, planning and development requirements.
- Ensure that the network complies with Brisbane City Council Water Distribution's *Planning Guidelines for Sewerage* with respect to network capacity
- Ensure that future development is facilitated
- Adverse impacts on the community and environment, such as sewage overflows, are minimised

We therefore consider growth to be the appropriate project driver only.

The *Feasibility Report* states the process used to calculate the predicted growth within the catchment. The results of the following two methods of calculating the population growth were compared:

- The Brisbane City Council's City Planning and Sustainability Division's Brisbane Urban Growth Model calculated the ultimate growth EP as 4990
- The Business As Usual (BAU) + Transit Oriented Development (TODs) + Transport Corridors (TCs) calculated the ultimate growth EP as 4564

The larger of the two values calculated using the above methods was used as the future growth value. This is reasonable as it is uses the precautionary approach.

In addition a review of development proposals was undertaken and the identified loadings from these proposed five developments have been added to the calculation.

Assumptions have been made as to the timing of the identified five developments. The assumption that has been made is that three out of five developments will be complete in 2011. The timing of the project will not meet this anticipated timescale as the projected completion date is June 2012. Although it is acknowledged that the developments will take time to be fully occupied and therefore contribute their expected wastewater flows to the network; the projects expected completion date is in June 2012 which is too late to meet the predicted demands.

The *Feasibility Report* states that the Lissner Street sewer is 80 years old and the Coronation Drive sewer is 95 years old. The Lissner Street sewer has benefited from an increased operating life due to re-lining completed in the 1983/84. The design life for these types of assets is 80 years. The results of the CCTV survey have recorded damage to the pipes. It has been recommended that both of these sewers are re-lined in the near future, which will increase the design life by 50 years.

As stated previously one of the project drivers is to ensure compliance with the *Environmental Protection Act 1994* in order to manage the risk of uncontrolled spills. The *Feasibility Report* states that the regulation of sewage treatment and sewerage networks has changed in January 2009 and that "*the Department of Environment and Resource Management (DERM) may investigate any discharge from the sewerage system."* The *Feasibility Report* goes on to state that "*(t)he maximum penalties associated with these offences have been increased from $1,500 to $22,000."*

As detailed above the existing assets have either passed or are close to the end of their design life. Condition surveys have been undertaken and show that the Lissner Street sewer will require rehabilitation in the next 10 to 15 years and that the Coronation Drive sewer will require rehabilitation in the next one to two years.

The primary driver of growth has been demonstrated.

Decision making process

Nine options were initially considered and eight were assessed as having 'unacceptable risks either in construction or in its ability to meet the project drivers' were discarded.

The options considered and the assessment comments are included below:

Table 90 Toowong sewers upgrade options analysis

Options	Reasons for discarding
Option 1 Do nothing	▪ Does not address existing system deficiencies ▪ Does not allow for future growth in the catchment
Option 2 Overflow storage	▪ Does not ensure that the existing sewerage system can cater for a design PWWF (1,200/EP/day), which is the key project driver ▪ No suitable sites identified in initial study for storage structure due to congested urban location ▪ Operation and maintenance of overflow storage structure likely to be problematic ▪ Initial sizing suggests a storage volume of 1 ML, which would be expensive to construct
Option 3 Wet weather pumping station	▪ No suitable sites identified in initial study for pump station due to congested urban location ▪ Difficulty in locating a nearby sewer with sufficient capacity to discharge to ▪ Intermittent operation of pump(s) may lead to operational difficulties ▪ Ongoing maintenance requirements ▪ Electricity costs ▪ Greenhouse gas generation ▪ Noise and odour issues ▪ Would need additional storage or a generator to allow for event of loss power from the grid
Option Inflow/infiltration minimisation	▪ Typically a large expenditure is required to achieve significant reduction in inflow/infiltration ▪ The assumed theoretical PWWF rate of 1,200/EP/day assumes effective infiltration and inflow management. ▪ Flows of PDWF almost surcharge the pipe therefore no wet weather flows can be contained in the existing system ie zero stormwater ingress would be required to make this option work, which is not achievable
Option 5 Water mining/re-use	▪ No heavy industry in the vicinity and so opportunity is limited ▪ No suitable sites identified in initial study a for treatment facility ▪ Would need to store about 1 ML ▪ No demand for irrigation of open space during wet weather events ▪ Likely odour problems if storing untreated wastewater
Option 6 Replacement of existing sewers	▪ Existing route runs underneath Toowong Village Shopping Centre and the Ipswich railway line, construction on this route would be problematic especially with connection of existing services ▪ Existing route runs along Coronation Drive (a major transport route), construction on this section of the route would impact on a large number of commuters and be high profile ▪ Construction using pipe-cracking or pipe-bursting is unlikely to be feasible due to the depth of the existing sewer and the high density of the catchment ▪ Extremely deep entry and exit pits in this congested urban location is unlikely to be feasible

Option 7 High level relief sewers	▪ Necessary for network to surcharge for these to operate ▪ These do not provide the same degree of flexibility of operations as augmentations upgrade. If the existing sewer is offline for any reason, there is an increased risk of surcharge and overflows upstream ▪ Poor velocities in relief sewer due to variable flows ▪ Potential for odour issues due to build up of deposits due to poor velocities ▪ Relief sewers need to have drops where a physical constraint is reached – such as other buried services – these create turbulence which leads to increased odour and sewer corrosion ▪ The initial study identified that the only section where a relief sewer is feasible is the Coronation Drive section. If a relief sewer was constructed in the Lissner Street section it would increase the surcharging upstream ▪ Due to the congested urban location it is likely that trenchless techniques would be required and so there is little financial benefit in constructing sewers at a shallower depth
Option 8 Augmentation at grade of existing sewers on existing alignment	▪ Existing route runs underneath Toowong Village Shopping Centre and the Ipswich railway line, construction on this route would be problematic especially with connection of existing services ▪ Existing route runs along Coronation Drive (a major transport route), construction on this section of the route would impact on a large number of commuters and be high profile ▪ Construction using pipe-cracking or pipe-bursting is unlikely to be feasible due to the depth of the existing sewer and the high density of the catchment ▪ Extremely deep entry and exit pits in this congested urban location is unlikely to be feasible
Option 9 (preferred option) Augmentation of sewers with an interceptor sewer to the Sylvan Road catchment	▪ Benefits listed as: ▪ High degree of certainty of success with manageable impact on the community ▪ Effectively duplicate the existing under-capacity pipework ▪ Route avoids major transportation routes and physical impediments

The *Feasibility Report* states that as only one option was put forward then no Net Present Value calculation has been undertaken. We consider that a comparison against a 'do nothing' option should have been undertaken as a minimum to allow a meaningful NPV analysis to have been undertaken.

The preferred option has been assessed as carrying a high level of construction risk due to the techniques proposed and the location and depth of excavations. It should be noted that several of the discarded options have been ruled out due to high construction risks (it has been difficult to assess the preferred option in terms of prudency or efficiency without having other options to compare it against).

The project risk assessment has been extracted from the Queensland Urban Utilities database and provided for review. This extract demonstrates that the procedures are in place to identify risks and to eliminate or reduce their likely impact on the project.

The project is assessed as prudent as the existing assets are both undersized. However, we have concerns with the lack of detailed options analysis undertaken.

19.2.5. Efficiency

The scope of works

As detailed previously all options were discarded in the initial high level analysis except for one and so by default the remaining has been selected as the best means of achieving the desired outcomes. As stated previously it would have been beneficial to take forward other options including a 'do nothing' option from the high level analysis with which to compare the proposed option against. However an appropriate scope of works for the project has been demonstrated.

Standards of service

The project has been designed to the Brisbane City Council Water Distribution *Planning Guidelines for Sewerage* as stated in the *Feasibility Report*. It is stated that sewers should be sized to pass Peak Wet Weather Flow of 1,200 L/EP/day (this figure approximates to 5 x ADWF), which is appropriate.

The preferred option uses advanced technology in order to reduce risks to the project ie the non-open cut methodology reduces the risk of adverse affects on the community and reduces the risk of unintended existing service interruption.

It has been demonstrated that the standard of service is appropriate.

Project cost

The cost estimates provided in the *Feasibility Report* were prepared by Project Support, which is an external cost estimator.

Furthermore four tenders have been received following advertisement in the Queensland Government Marketplace eTenderbox. The tenders have been reviewed as per Queensland Urban Utilities Procurement Manual as stated in the *Post-Market Submission*.

The project forecast is estimated as $5,328,000 in the *Post-Market Submission* and is broken down into the following significant costs and their relative percentage with respect to the overall cost:

- Contract with Contractor = $3,563,470 (66.9%)
- Contract contingency (allowance of 15% of contract value) = $534,561(10.0%)
- Internal (project and contract management and operational support costs) = $1,029,969 (19.3%)

- Project contingency (excluding contract contingency) = $200,000 (3.8%) This value is about 20% of the internal costs. No details have been provided to explain what these costs are for

The project costs are based on current market rates, which demonstrate that the costs are efficient, with the exception of the project contingency (excluding contract contingency).

19.2.6. Timing and Deliverability

A project management plan has been completed for the project.

The risks to be project have been outlined in Section 6.1 of the *Post-Market Submission* as:

- *"The alignment of the sewer affects approximately 70 houses, apartments and businesses as identified by the Queensland Urban Utilities communications consultant.*
- *The Toowong Village Shopping Centre with its Railway Station caters to the needs of a wide catchment containing a large population. It will be considerably affected as roads leading into the village will be either blocked or partially blocked and have limited access for at least three to four months. Engagement with Village Management is ongoing in managing the impacts.*
- [redacted]
- *The portion of Sylvan Road where works will occur is an Arterial Road. A March 2010 traffic count indicates that 4,991 vehicles used Sylvan Road between 0630 to 1830 Hrs on a Tuesday. 4,832 were light vehicles (Cars).*
- *Works in Sylvan Road near this junction will occur only at night bringing in further complexity. Traffic Officers would not grant day time permit to work.*
- *Cr Matic has expressed concern with night works in this location and is endeavouring to discuss this matter with Traffic Officers of the City. Irrespective, the stress on stakeholders in this area will be greater if work does not progress in a timely manner.*
- *Intimate knowledge of machinery, pipe material and sizes to be used on a contract of this nature are crucial to delivering it on time*
- *Not delivering the contract within stipulated time frames brings immense risk to Queensland Urban Utilities from stakeholders*
- *Even with contract running to schedule, there are likely to be stakeholder issues but will be largely manageable by the project delivery team*

- *If delays occur due to contractor's potential lack of capability, they could result in increased risk when managing stakeholders. This has potential for reputational damage to Queensland Urban Utilities.*
- *Tunnelling with a larger diameter boring head is more reliable than tunnelling with a smaller head in high strength rock material as identified with this contract. Productivity rates are higher with larger heads. This problem became apparent with the Auchenflower Micro Tunnelling contract.*
- *If a tunnelling head broke down 7 – 8 metres below the road, it has to be retrieved by an open cut excavation, which has the potential to block traffic movements completely on either Lissner or Bennet Streets, bringing immense risk and reputational damage to Queensland Urban Utilities from the resulting impacts to the community."*

In Section 6.2 of the *Post-Market Submission* an additional risk was recorded that as the contractor is employed on a similar project for Queensland Urban Utilities then they may not have sufficient resources for the project. This has been raised with the contractor who stated that dedicated resources are available.

Section 8 of the *Feasibility Report* details risks that could impact on the success of the project and are as follows:

- Changes to traffic management requirements as the current approval is in principle only. When the contract is awarded and work begins, there may be some changes required by Brisbane City Council which could result in variations
- The construction methodology and pricing of the deep manholes by Rob Carr is in accordance with the design drawings and geo-technical information. Should the site conditions differ requiring the manholes to be built to an alternate design and methodology, the additional cost will be a variance. This has occurred with manhole number four in the Auchenflower contract
- The variable and stationary signage that is required in the Toowong Village vicinity and in the vicinity of other commercial premises is still unclear. This will need agreement from the stakeholders once the contract is signed
- Should there be a conflict with the location of manholes and the alignment of Energex or other services, this there will be a delay and service location costs as well

The proposed timeline of the project is outlined in Section 7 of the *Feasibility Report* and as the contractor has sufficient resources available then it is likely that the project can be provided within this timeframe providing that the risks can be managed.

While it is assessed that the project delivery has been demonstrated as achievable two risks to the project are worth noting as they could impact significantly on the project. These risks are the technical complexities of micro-tunnelling through medium to high strength rock (such as the contractor having insufficient experienced staff and the risk of the head of the tunnelling machine breaking) and traffic management (such as gaining Traffic Officer buy-in of the proposed works on Sylvan Road).

19.2.7. Efficiency Gains

The details of the proposed works that have been received to date do not detail any efficiency gains.

By constructing the interceptor sewer the useful asset life of the existing sewers should be extended, assuming that the recommendation to re-line the sewers in the short to medium term is completed.

19.2.8. Allocation of overhead costs

No overheads have been allocated to this project.

19.2.9. Policies and procedures

Compliance with the Authority's initiatives is summarised in **Table 91** below.

Table 91 Toowong Sewers Upgrade Project - compliance with the Authority's initiatives

Initiative	Achievement Yes/No/Partial	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole of entity) perspective	N/A	Due to the nature of the project ie sewer augmentation there is little scope for considering a regional perspective in this localised scheme.
A standardised approach to cost estimating, including a standardised approach to estimates for items such as contingency, preliminary and general items, design fees and contractor margins, so that there is uniformity of cost estimating across all proposed major projects	Yes	The cost estimate has been calculated by external cost estimators. Additionally tenders have been received for the works that are detailed in the *Post-Market Submission*.
A summary document to be prepared for identified major projects so as to facilitate standardised reporting	Yes	A standardised summary document has been provided for the project

Initiative	Achievement Yes/No/Partial	Comment
An implementation strategy to be developed for each major project that includes recommendation on delivery methodology, program and a risk review process	Yes	The *Feasibility Report* and the *Post-Market Submission* contain details of the delivery methodology, program and a risk review process
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	Yes	The Pre-Market Submission and the *Feasibility Report* are evidence of this process.

19.2.10. Summary

The project has been demonstrated as prudent however, in future, it would be beneficial to investigate the options in terms of Net Present Value calculations and a multi-criteria assessment for example that takes into account of technical, environmental and social factors. This would allow assessment of the relative merits of the options.

The project has been assessed as prudent. The primary driver of growth has been demonstrated.

The project has been assessed as efficient. An appropriate scope of works, acceptable standards of service, reasonable project costs, and achievable delivery have been demonstrated.

Value of expenditure not considered to be prudent and efficient – NIL.

19.3. Mellor Place Trunk Sewer Upgrade

19.3.1. Proposed capital expenditure

The Mellor Place Trunk Sewer Upgrade Project is comprised of two projects within the capital budget, Stage 1 and Stage 2. We have been commissioned to review the expenditure associated Stage 1 only. **Table 92** shows the proposed capital expenditure of the Mellor Place Trunk Sewer Upgrade Project – Stage 1 within the 2011/12 to 2013/14 budgets.

- **Table 92 Mellor Place Trunk Sewer Upgrade Project – Stage 1 – Proposed capital expenditure profile**

	Costs ($000s)				
Source	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**Total**
2011/12 Information Template	-	700	-	-	700
Capital Investment Program: Enhance Project Summaries 2011-12	356	700	-	-	1,123[1]
Project Delivery Document	732	323	-	-	1,077[2]

[1] Value includes expenditure of about $67,000 from previous financial years
[2] Value includes expenditure of about $22,000 in the 2009/2010 financial year

The 2011/12 Information Template details a cost of $700,000 in the next financial year; the *Capital Investment Program: Enhance Project Summaries 2011-12* document specifies a cost that corresponds with this value. The total cost in the *Project Delivery Document* corresponds with the total cost in the *Capital Investment Program: Enhance Project Summaries 2011-12* document, with the totals varying by about 5 percent. The *Project Delivery Document*, which is the earliest document, states that the annual expenditure is $732,000 for the 2010/11 financial year followed by $323,000 for the 2011/12 financial year. The *Capital Investment Program: Enhance Project Summaries 2011-12* document states the reverse of this and specifies the annual expenditures as $356,000 for the 2010/11 financial year and $700,000 for the 2011/12 financial year.

These values suggest that the majority of expenditure, ie $700,000, was delayed from the 2010/11 financial year to the 2011/12 financial year but that the total value is about $1,100,000 for the Stage 1 project. This supports the value submitted to the Authority for the 2011/12 financial year of $700,000.

19.3.2. Project description

The proposed works are to replace a 225 mm diameter existing sewer and a 300 mm diameter existing sewer with a 450 mm diameter sewer in two stages. In the 2011/12 financial year it is proposed to construct 510 metres of the sewer from MH19119 to MH18420 (being Stage 1) and in the 2014/15 financial year, which is beyond the scope of this review, it is proposed to construct 650 metres of the sewer from MH18420 to MH18262 (being Stage 2).

19.3.3. Provided documentation

The key reference documents used for this review are:

- *Capital Investment Program: Enhance Project Summaries 2011-12*, Queensland Urban Utilities, 17 February 2011
- *Minor Capital Project Submission*, Queensland Urban Utilities, 30 August 2010
- *Project Delivery Document*, Ipswich Water, June 2010
- *Feasibility Scoping Document – Sewer Trunk Main Upgrade Mellor Place & Bradfield Drive, Brassall*, Ipswich Water, February 2010
- *Feasibility Report Mellor Place 375mm Sewer Main Extension – Tivoli Catchment*, Ipswich Water, September 2009

19.3.4. Prudency

Cost driver

The nominated cost driver for this project by Queensland Urban Utilities is growth, as stated in the Ipswich Water *Project Delivery Document*. The project cost has been assigned as 100 percent to this driver.

The growth cost driver is supported by the information provided in Queensland Urban Utilities response to suggested additional information requirements. **Table 93**, below, outlines the current population projections for the Mellor Place sewer catchment.

- **Table 93 Mellor Place population projections**

Time horizon	Population (EP)	PWWF (L/s)
Existing population estimated from lot count	2,500	33.3
Projected 2012 population based on Development Applications (DA) lodged in the Ipswich City Council DA system	4,995	66.5 (100% increase)
Estimated ultimate projection (fully developed by 2015)	6,525	86.8 (160% increase)

The *Feasibility Report Mellor Place 375mm Sewer Main Extension – Tivoli Catchment* identifies that the section of pipe to be upgraded is over 70 years old and has had issues (not specified) relating to its age and condition. The report further states that hydraulic performance within the study area was assessed against the design criteria for the 2011, 2016, 2021 and ultimate planning horizons for peak dry weather flow (PDWF) and peak wet weather flow (PWWF) conditions. The report states that:

> *"Analysis identified that for PWWF conditions within the study area:*
>
> - *major capacity issues by 2011/12 due to developments proposed*
> - *surcharge will occur over 1 m from the soffit of the pipe from 2012*
> - *situation worsened within increased hydraulic loadings associated with future planning horizons"*

The project has been assessed as prudent. The driver of growth is appropriate.

Decision making process

The *Project Delivery Document* provides an overview of the options assessment completed. Three options were investigated in the *Feasibility Report Mellor Place 375mm Sewer Main Extension – Tivoli Catchment*, these were:

Option 1 New main with route running parallel to the existing 300 mm sewer main

Option 2 New main with route running direct route with creek crossing and then run parallel to the existing main

Option 3 New main with route through Ipswich Grammar Sports ground and connecting to the upstream manhole of the 600 mm main in Sydney Street

The *Feasibility Report Mellor Place 375mm Sewer Main Extension – Tivoli Catchment* states that:

> *"The available options were limited for the alignment due to the constraints in the area due to following reasons:*
>
> - *According to the planning report as the new sewer main will not replace the existing sewer, there is no need to pickup any of the existing connections*
> - *the closeness to the major water body, (Iron) Pot Creek*
> - *Due to the topography of the area, creek crossings and the disturbances to the residents and the overall community*
> - *Limited room in the road reserve due to existing 300mm sewer main in the road reserve"*

A multi-criteria analysis incorporating triple bottom line criteria was undertaken on the three options.

Table 94 Multi Criteria Analysis (MCA) Results

Evaluation Criteria	Weighting	**Option 1:** 375 mm main parallel to existing main - 980m		**Option 2:** 375 mm sewer main - 920m in route 2		**Option3:** 375 mm sewer main along route 3 - 900m	
		Score	Risk rate	Score	Risk rate	Score	Risk rate
System Operation	5%	2	1.25	2	1.25	4	2.5
Constructability	15%	14	8	15	9.25	19	13.25
Serviceability	15%	5	6.75	5	3.75	6	7.5
Social/ Community/ Env	15%	5	8.75	7	12.5	7	13.75
Total Non financial	50%		24.75		29.75		37
Economic	50%						
Capital Cost $		$3 M		$2.5 M		$2.3 M	
Total Financial			50		42		38
Total	100%		74.75		71.42		75.33
Option Ranking		2		1		3	

The preferred option from the multi criteria analysis was Option 2. This was not the lowest capital cost, but is comparable to the lowest capital cost option.

During the detailed design stage issues were identified with the proposed solution such that *"it was observed that neither existing nor the proposed 375 mm mains will meet the ICC Planning Guidelines in meeting the cleansing velocity for dry weather flows. In addition the condition assessment undertaken recently has confirmed the deterioration of the pipe condition at a few locations which is due to shallow gradient of the existing main."*

This resulted in previously selected preferred option being discarded and alternatives option being identified. The two options that were then taken forward are:

- The preferred option of online replacement of the existing main with a 450 mm diameter pipe in two stages
- A 375 mm diameter pipe laid in parallel to the existing pipe. It is noted that this option will require annual expenditure for regular flushing of the existing main

The *Project Delivery Document* concludes that:

> *"Both options have NPV (Net Present Value) values; online replacement with $1.91 M against the parallel main with $1.99 m and therefore does not show any added value of keeping the existing pipeline with regular operational activities and issues.*
>
> *In addition, downstream mains are located close to Ironpot Creek embankment that are precipitous and in some cases densely overgrown. It is considered impractical in part to construct twin mains along these sections as proximity to steep Creek embankments would require specialised construction requirements at high cost.*
>
> *Further, locating an additional sewer main in backyards of 4 private properties will limit the use and create an additional constraint for the property owners."*

The proposed works are a reasonable solution based on the justification given in the *Project Delivery Document*. The whole of life costs for both of the options are presented below in **Table 95** and **Table 96**.

- **Table 95 Whole of Life cost calculation for Option 1 – Two stage online replacement**

Year	2011	2012	2013	2014	2015	2016 - 2036	Total NPV
Capital Costs	1,092,386	-	-	1,172,598	-	-	-
O&M Costs (0.5% civil + 4% M&E)	2,000	2,000	2,000	2,000	2,000	40,000	-
Whole of Life Cost (Discount Rate 7%)	1,094,386	2,000	2,000	1,174,598	2,000	40,000	-
Total NPV	-	-	-	-	-	-	1,729,804

- **Table 96 Whole of Life cost calculation for Option 2 – Single stage with a parallel main**

Year	2011	2012	2013	2014	2015	2016 - 2036	Total NPV
Capital Costs	2,277,556	-	-	-	-	-	-
O&M Costs (0.5% civil + 4% M&E)	2,000	2,000	2,000	2,000	2,000	40,000	-
Whole of Life Cost (Discount Rate 7%)	2,279,556	2,000	2,000	2,000	2,000	40,000	-
Total NPV	-	-	-	-	-	-	1,907,407

In summary, the Mellor Place sewer catchment is expecting significant growth in the catchment over the next couple of years. We are satisfied that Queensland Urban Utilities has undertaken a thorough options analysis and has considered the risks and financial implications.

The project has been assessed as prudent. The primary driver of growth and the secondary driver of renewal have been demonstrated.

19.3.5. Efficiency

The scope of works

The scope of works for the project includes:

- Geotechnical investigations, survey and design of 450 mm diameter gravity sewer main approximately 1160 meters long (MH 19119 to MH 18262 at Sydney Street) along the existing alignment of the 300 mm main including two aerial crossing, along the route at Mellor Place to Sydney Street in accordance with Queensland Urban Utilities standards
- Consultation with affected property owners, Ipswich City Council and the other agencies to obtain approval/ consent for the proposed pipeline construction
- Consultation and necessary approvals for the creek crossing and other requirements associated with replacement of the existing main with a larger diameter pipe
- Contingency planning and approvals for service continuity from Queensland Urban Utilities Operations section
- Construction of the new 450 mm diameter sewer trunk main of approximately 1160 meter in single stage or in two stages (depending on the final design) to replace the existing 225 mm and 300 mm sewer mains. Selection of suitable pipe material based on the selected method of construction including manhole replacements in accordance with Queensland Urban Utilities standards
- Re-connect all existing laterals and connections to the new main and manholes

- Testing and commissioning of the new sewer pipeline in accordance with Queensland Urban Utilities' standards

The scope of works is appropriate.

Standards of service

The proposed scope of works has been designed to satisfy the criteria in the Ipswich City Council Planning Guidelines. This demonstrates that the project utilities acceptable standards. As the project is still in the feasibility/ design phase the final design of the project will comply with the Queensland Urban Utilities standards.

The standards of service used are appropriate.

Project cost

The project costs have been estimated as follows in the *Project Delivery Document*:

- Stage 1 – $1,100,000 ± 25%
- Stage 2 – $1,200,000 ± 25%

A breakdown of the Stage 1 cost estimate is provided in **Table 97**, below. It should be noted that Stage 2 is beyond the scope of the review.

- **Table 97 Preliminary cost estimate breakdown - Stage 1**

Item	Description	Unit	Qty	Rate ($)	Amount ($)
Part A – Preliminaries	Management plans, contingency plans, site establishment, disestablishment, project management, administration, traffic management etc.	%	10	699,250.00	69,925.00
	Flow controls and contingency management	Item	1	40,000.00	40,000.00
Part B – Gravity Sewer (trenched) - urban	Supply and construct DN450mm trenched gravity sewer in sandy soil to soft rock including trenching, laying, jointing, anchoring, thrust blocks, bedding and backfill.	-	-	-	-
	1.5-3.0 m	m	465	1,250.00	581,250.00
	3.0-4.5 m	m	0	1,400.00	-
	Road crossing	m	0	1,550.00	-
Part C – Aerial Gravity Sewer Creek Crossing (supported by columns)	Supply and fixing DN450mm steel gravity sewer pipes as per the required specification	m	30	1,200.00	36,000.00
	Supply and construct columns at 5m intervals to support the aerial pipe of 2-	Item	1	25,000.00	25,000.00

Item	Description	Unit	Qty	Rate ($)	Amount ($)
	3m high				
	Supply and lay steel pipes supported on columns for the creek crossing	Item	1	10,000.00	10,000.00
Part D – Manholes	Construction of in-situ manholes including excavation, forming, reinforcing, concrete, benching, bedding, connections and backfill	-	-	-	-
	Provisional sum for manhole replacement, wherever necessary	Item	1	12,000.00	12,000.00
Part F – Sewer Connections	Connections for existing sewer mains including excavation, forming, reinforcing, concrete, benching, bedding, connections and backfill with a drop connection where necessary	Item	1	25,000.00	25,000.00
	Decommissioning of existing pipes and manholes	Item	1	10,000.00	10,000.00
				Sub Total	**809,175.00**
				Add 10% Construction Contingency for unforeseen conditions	80,917.50
				Add 25% Indirect Costs (planning, design, survey, geotech, supervision etc)	202,293.75
				Total (Excl GST)	**1,092,386.25**

The *Feasibility Report Mellor Place 375mm Sewer Main Extension – Tivoli Catchment* states, in relation to the three options initially assessed, that:

> *"The cost estimates determined for each of the short-listed options were developed using the following basis and qualifications.*
>
> - *the estimate base date is November 2009. The estimate assumes no escalation beyond the base date*
> - *estimates of quantities are taken from MapInfo Maps and InfoWorks profiles*
> - *estimate rates have been based on the rates in Project Services data base and supplier quotes and review of estimates used in similar projects. However, it is possible that the actual construction costs could vary from the cost estimates provided as the tendered construction costs depend upon construction activity at risks transferred to the contractor*
> - *traffic control and all safety management implementation are included in the unit rates and allowances*
> - *estimate costs are based on all the site works being carried out in one contract. Should this condition change, cost increases are anticipated to cater for additional construction facilities and contract letting/administration works*
> - *the estimate costs for the options comparison are consistent with producing a +25%/-15% estimate."*

Queensland Urban Utilities has indicated that as the project is currently in the feasibility/ design phase an independent construction estimate (based on the final design) will be completed early in 2012 followed by a project management plan, pre-market and tender in accordance with Queensland Urban Utilities' Procurement Policy and Guidelines.

We believe that the use of a cost estimation database is a satisfactory method for determining preliminary costs estimates. The determination of actual costs from market tenders once the design has been finalised is appropriate. We conclude that the costs are efficient.

19.3.6. Timing and Deliverability

The *Project Delivery Document* contains a section titled 'Project Plan' however this is a high level outline of a project plan and lacks enough detail to complete a comprehensive review.

The key project risks as stated in the *Project Delivery Document* are:

- *"Poor contingency planning can cause EPA issues due to overflows as the containments would be more difficult in the creek area.*
- *Poor contingency planning can cause existing sewer flow not maintained and odour and H&S issues for the local residents and commuters.*
- [redacted]
- *Long term aerial mains supported on columns can cause damages and overflows if not properly designed & constructed which can subjected to heavy floods.*
- *The possible cost increases due to geology of the creek area for columns, aerial crossing if geotechnical investigations completed prior to designs.*
- *Operations and maintenance difficulties for creek crossings & aerial mains."*

As indicated above the project is currently in the Feasibility/ Design phase. An independent construction estimate is due to be completed early in 2012, with tendering and assessment occurring thereafter.

Consequently it is likely that the construction associated with the project will not commence until March 2012 at the earliest. Completing the above scope of works for 510 m of sewer will be very challenging in four months, with a reasonable likelihood of the works not being completed and commissioned before the 30 June 2012.

19.3.7. Efficiency Gains

No efficiency gains have been identified for the project.

19.3.8. Allocation of overhead costs

No overheads have been assigned to this project.

19.3.9. Policies and procedures

Compliance with the Authority's initiatives is summarised in Table 98 below.

- **Table 98 Mellor Place Trunk Sewer Upgrade Project - compliance with the Authority's initiatives**

Initiative	Achievement Yes/No/Partial	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole of entity) perspective	N/A	Consideration of the project in a regional perspective is not applicable as it is concerned with a replacement of a section of the sewerage network
A standardised approach to cost estimating, including a standardised approach to estimates for items such as contingency, preliminary and general items, design fees and contractor margins, so that there is uniformity of cost estimating across all proposed major projects	No	Insufficient evidence has been provided
A summary document to be prepared for identified major projects so as to facilitate standardised reporting	Yes	A standardised summary document has been provided for the project
An implementation strategy to be developed for each major project that includes recommendation on delivery methodology, program and a risk review process	No	Insufficient evidence has been provided
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	No	Insufficient evidence has been provided.

19.3.10. Summary

The Mellor Place Trunk Sewer Upgrade Project is essential to accommodate the growth proposed in the catchment.

The project has been assessed as prudent. It is necessary under the growth cost driver. The replacement of the existing 225 mm and 300 mm gravity mains with a new 400 mm gravity main is necessary to ensure that the catchment has capacity to handle the predicted growth.

The project is found to be efficient because the scope of works meets the needs of the project and the costs are reasonable and the standards of service used are appropriate. The delivery and commissioning of the project before the 30 June 2012 will be challenging.

Value of expenditure not considered to be prudent or efficient – NIL.

19.4. Summary

A sample of nine projects were identified and assessed as a representative sample of the capital expenditure program Queensland Urban Utilities. We have assessed these projects against the Authority's definitions of prudency in particular the relevant driver and the decision making process and efficiency, including the standards of service, scope of work, timeliness of delivery and the costs.

Separately another project, the Bundamba project, is being reviewed by others, as we had a key role in the development of that project. Notwithstanding this, the 10 projects comprise 17 percent of the proposed 2011/12 expenditure, 12 percent of the 2012/13 expenditure and 10 percent of the 2013/14 expenditure of the nine projects reviewed by us.

The capital expenditure of all nine projects were assessed as is prudent and efficient.

Table 99 provides an overview of the final assessment made for each project of the project sample chosen for assessment of prudency and efficiency

- **Table 99 Sample project summary - revised capital expenditure profile ($000s)**

Project	Cost 2011/12 to 2013/14	Prudent	Efficient	Revised Cost 2011/12 to 2013/14
Sewer Trunk System Renewals Program	35,600	Prudent	Efficient	35,600
ICT Strategy	42,000	Prudent	Efficient	42,000
Brisbane Water Reticulation System Renewals Program	29,100	Prudent	Efficient	35,811
Brisbane Wastewater Treatment Flood Recovery	6,674	Prudent	Efficient	6,674
Fleet Replacement Program	14,545	Prudent	Efficient	15,683
Auchenflower Branch Sewer Upgrade	5,510	Prudent	Efficient	5,510
Canungra Water Reclamation Plant Upgrade	3,345	Prudent	Efficient	3,345
Toowong Sewers Upgrade	4,982	Prudent	Efficient	4,982
Mellor Place Trunk Sewer Upgrade	700	Prudent	Efficient	700

A summary of our assessment of the drivers identified for the capital projects reviewed is provided in **Table 100.** In a number of cases, Queensland Urban Utilities has ascribed compliance as a driver (either primary or secondary) where we believe that the non-compliance has arisen either from plant failure (hence renewal is the appropriate driver) or plant under capacity (in which case we believe growth is the appropriate driver).

- **Table 100 Assessment of capital project cost drivers**

Project	Drivers identified by Queensland Urban Utilities	Drivers recommended by SKM
Sewer Trunk System Renewals Program	Renewal	Renewal
ICT Strategy	Improvement	Improvement
Brisbane Water Reticulation System Renewals Program	Renewal	Renewal
Brisbane Wastewater Treatment Flood Recovery	Legal (compliance) (primary) Renewal (secondary)	Renewal
Fleet Replacement Program	Not specified	Renewal
Auchenflower Branch Sewer Upgrade	Renewal(primary) Growth (secondary) Legal (compliance) (secondary)	Growth (primary) Renewal (secondary)
Canungra Water Reclamation Plant Upgrade	Growth (primary) Renewal (secondary) Legal (compliance) (secondary)	Growth (primary) Renewal (secondary) Legal (compliance) (secondary)
Toowong Sewers Upgrade	Growth (50%)/ Renewal (50%)	Growth (primary)
Mellor Place Trunk Sewer Upgrade	Growth	Growth

20. Interactions between capital expenditure, operating expenditure and demand forecasting

Short term forecast

Residential consumption

SKM's demand projection report finds that QUU has underestimated the likely demand from its residential sector by up to 9% in 2014. The difference in the forecast in largely due to the assumption held by QUU that average demand will rebound at a rate of only 1% in 2012 and 0.5% pa in 2013 and 2014. SKM believes that this is too conservative as it means that it would take around 40 years to reach the estimated rebound target in SEQ of 200LPD. SKM is of the opinion that rebound will occur over around 5 years and as a result has forecast higher residential water demand.

- **Table 101 QUU and SKM residential water demand projections**

Residential Water Demand (ML)	2012		2013		2014	
	QUU proposed	SKM Recommended	QUU proposed	SKM Recommended	QUU proposed	SKM Recommended
Brisbane	58,368	59,202	59,599	62,668	60,855	66,362
Ipswich	9,744	9,857	10,143	10,780	10,559	11,775
Lockyer Valley	1,141	1,083	1,184	1,140	1,229	1,202
Scenic Rim	816	763	833	801	850	842
Somerset	608	546	621	573	633	603
Queensland Urban Utilities	**70,677**	**71,451**	**72,379**	**75,963**	**74,126**	**80,784**

Non-residential consumption

SKM's demand projection report finds that the QUU forecast of the likely demand from its non-residential sector is reasonable. The difference in the forecast is due to SKM using higher connection growth rates. Difference in water volume forecasts amount to about 1.8% pa over the forecast period.

- **Table 102 QUU and SKM non-residential water demand projections**

Non-Residential Water Demand (ML)	2012		2013		2014	
	QUU proposed	SKM Recommended	QUU proposed	SKM Recommended	QUU proposed	SKM Recommended
Brisbane	32,530	32,575	32,937	33,025	33,350	33,477
Ipswich	4,514	4,387	4,571	4,595	4,628	4,804
Lockyer Valley	289	293	294	302	299	311
Scenic Rim	345	350	349	359	353	368
Somerset	559	567	566	583	573	598
Queensland Urban Utilities	**38,237**	**38,172**	**38,717**	**38,863**	**39,203**	**39,558**

Wastewater connections

As we found that there was insufficient data to assess if QUU's wastewater connection growth rates were reasonable, SKM applied the dwelling growth rates projected by the OESR/PIFU to wastewater connection to obtain QUU's wastewater connection forecast. As a result, SKM's recommended wastewater connections were about 0.6% pa lower for residential customers and 0.7% pa higher for non-residential customers over the forecast period.

- **Table 103 QUU and SKM waste water connections projections**

Wastewater connections	2012		2013		2014	
	QUU proposed	SKM Recommended	QUU proposed	SKM Recommended	QUU proposed	SKM Recommended
Residential						
Brisbane	392,646	390,778	398,929	395,142	405,312	399,554
Ipswich	57,216	57,620	59,264	60,104	61,385	62,695
Lockyer Valley	4,129	4,102	4,264	4,210	4,403	4,320
Scenic Rim	4,056	4,085	4,119	4,178	4,183	4,274
Somerset	2,796	2,819	2,839	2,888	2,883	2,957
Queensland Urban Utilities	**460,842**	**459,405**	**469,414**	**466,521**	**478,166**	**473,800**
Non-Residential						
Brisbane	29,079	29,112	29,370	29,438	405,312	29,766
Ipswich	1,797	1,856	1,815	1,936	61,385	2,019
Lockyer Valley	385	390	390	400	4,403	411
Scenic Rim	786	796	794	814	4,183	832
Somerset	494	501	499	513	2,883	525
Queensland Urban Utilities	**32,541**	**32,655**	**32,867**	**33,100**	**478,166**	**33,554**

Long term projections

SKM found that it is likely that parts of the QUU network will not need to be based on its current design criteria of 230 LPD. These include the three more rural LGAs of Lockyer Valley, Scenic Rim and Somerset where the projected average consumption is around the 165 LPD to 180 LPD level. However, whether the term planning criteria should be lowered to reflect the likely lower average rate of consumption is however an issue to be debated given that changing the 230 LPD long term forecasting consumption target will require an explicit change to the desired service standard used to determine infrastructure capacity.

QUU states in its submission that the design average dray weather flow is 210 LPD. The QUU system is designed to carry 5 times the average dry weather flow in accordance with the DERM planning guidelines. Based on the Queensland Department of Environment and Resource Management guidelines[11] these peak and flow rates are reasonable. The guidelines indicate that "(g)*enerally ADWF will range between 150-275 L/EP/d. This flow should be consistent with internal household water use.*" It also states that peak wet weather flow of 5 times ADWF is appropriate for a conventional gravity system.

20.1. Relationship with capital expenditure

As discussed previously the current water consumption rate is below both the required 230 L/person/day and aspired 200 L/person/day as contained within the South East Queensland Water Strategy. Trunk water infrastructure design criteria is based on the average day demand and factors of it, such as mean day maximum month (MDMM) and mean day (MD). These factors are greater than one and generally less than two. Consequently a change in the average day consumption rate can result in an amplified change to the design criteria. Notwithstanding this, caution should be used as, in practice, a reduction in average day consumption does not necessarily mean that the peak consumption rate reduces. Peak consumption is a function of human behavioural responses to extreme weather. Consequently the average day to maximum day (AD:MD) factor may increase if the average day rate decreases, unless the customer behaviour is changed to reduce the use of water on extreme weather days.

Consequently the current impact of maintaining the current design criteria whilst currently operating at lowered consumption rates is that there is some reserve capacity with the distribution system. Coarse analysis suggests that this may be in the order of 20 percent. Without data from a longer period it would not be prudent to attempt to utilise this spare capacity as a long term solution, as the consumption habits of a population can change faster that the ability to implement trunk infrastructure.

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[11] Department Of Environment and Resource Management, *Planning Guidelines for Water Supply and Sewerage*, Chapter 5 Demand/Flow and Projections

With respect to water reticulation infrastructure, the critical design criterion is usually fire fighting flows. Consequently the reduction in unit consumption rates is unlikely to have a significant impact on the size of smaller diameter infrastructure.

Overall Queensland Urban Utilities water system infrastructure sizes are unlikely to be highly sensitive to recorded variances in the unit consumption rate and reducing the rates is premature with regard to the limited amount of information.

The augmentation of water distribution trunk infrastructure generally results in a step change in capacity and consequently the variance in near term demand forecast usually changes the anticipated date of the next augmentation only slightly. These are usually accommodated in timing reviews of these works, which are a mandatory action for strategic planning projects and their associated business cases.

With regard to wastewater, an increase in the consumption of reticulated drinking water does not lead directly to an increase in wastewater generation, as not all reticulated water is released to the sewers. In particular during water restrictions irrigation, which is not directly entrained into sewers, is dramatically reduced. Consequently when restrictions are lifted, water consumption can increase without a commensurate increase in wastewater generation.

The wastewater flows are likely to be more sensitive to inflow and infiltration, whereby storm water enters sewers directly or groundwater enters sewers through infrastructure defects, respectively.

It is usually co-incidental that the increase in wastewater generation from increased inflow and infiltration occurs in the same timeframe as increased reticulated water consumption as rainfall replenishes both surface water storages (ie dams) and groundwater tables.

The implementation of reduced infiltration gravity sewers (NuSewers, Smartsewers, RIGS) aims to reduce this inflow and the system is generally designed for the consequent reduction in the peaking factor.

Both water conservation measures and infrastructure improvements have significantly reduced design criteria such as average dry weather flows. There are generally already allowed for in the generation rate and peaking factors currently used.

With regard to wastewater treatment the design criteria of various elements of a plant are either based on organic load or hydraulic load. A reduction in the amount of water transporting the organic load does not change the load, just the concentration. Consequently these elements such as a reactor tank (anoxic and aerobic compartments) size are not varied. For the elements where

hydraulic load is the design criteria, these are usually specifically design based on gathered data and potential savings are only a small reduction in vessel height or pump capacity.

Consequently the cost of a treatment facility is generally not sensitive to changes in hydraulic load. Conversely they can be sensitive to apparently small changes in environmental licence concentrations, as these can require additional process elements.

As the required wastewater infrastructure is not highly sensitive to changes in generation rates, the demand aspect of connections is the significant factor. Wastewater system augmentations usually result in a step change in capacity and consequently the variances in near term demand forecasts usually change the anticipated timing slightly only.

20.2. Relationship with operational expenditure

The short term demands have been used to estimate budgets for several variable rate operating costs centres including:

- Bulk water costs
- Electricity
- Sludge handling
- Chemical costs

The assumption that the above operating costs are related to water consumption applies to both the Water Service and the Wastewater Service, where a return factor (ratio between drinking water use and what is returned to the wastewater system) is generally applied. Hence, the growth index that has been used to estimate the required quantities should be revised, as per **Table 104**, below and the budget estimates for volume related costs updated accordingly.

- **Table 104 Revised growth indices for variable operating costs**

Total water demand	2011/12		2012/13		2013/14	
	QUU proposed	SKM Revised	QUU proposed	SKM Revised	QUU proposed	SKM Revised
Brisbane	3.87%	4.88%	1.80%	4.27%	1.80%	4.33%
Ipswich	6.70%	6.59%	3.20%	7.94%	3.21%	7.83%
Lockyer Valley	9.75%	5.60%	3.36%	4.80%	3.38%	4.92%
Scenic Rim	9.84%	5.30%	1.81%	4.22%	1.78%	4.31%
Somerset	9.89%	4.80%	1.71%	3.86%	1.60%	3.89%
Total	**4.43%**	**4.88%**	**2.00%**	**4.27%**	**2.01%**	**4.33%**

20.3. Relationship between capital expenditure and operational expenditure

There are often direct tradeoffs between capital expenditure and on-going operation and maintenance expenditure. For example, energy efficient motors can be installed having higher capital costs than standard motors but with lower operating costs due to reduced energy consumption, similarly, improved sludge dewatering plant will reduce sludge disposal costs as both volume and weight is reduced. Timing of capital plant replacement can impact on operation and maintenance costs as plant that is close to being time expired tends to be more expensive to maintain. In order to evaluate the cost/benefit of capital spend to reduce operating expenditure, lifecycle cost analysis techniques must be applied.

Of the capital projects reviewed, only the Fleet project specifically considered the trade off between deferred capital expenditure and operating costs of fleet vehicles.

21. Proposed revised templates

We have amended the submission templates for capital and operating expenditure in accordance with our evaluation of the operating and capital expenditure items reviewed on an exception basis.

A summary of changes for operating and capital expenditure items is provided below.

21.1. Operating expenditure

As we found all operating expenditure in our sample to be prudent and efficient we have made no changes to the 2011/12 Information Template in respect of operating expenditure forecasts.

We have revised the operating costs for volume and connection dependent operating expenditure within our sample in **Table 105.**

- **Table 105 Recommended amendments to operating cost budgets**

Category	Service	Revisions	2011/12	2012/13	2013/14
Bulk water demand		Queensland Urban Utilities assumed (ML)	102,709.4	104,560.1	106,445.8
		SKM revised (ML)	103,375.6	107,523.6	111,906.2
Electricity	Water	Queensland Urban Utilities proposed ($'000)	1,063.5	1,148.4	1,240.1
		SKM revised ($'000)	1,070.4	1,180.9	1,303.7
	Wastewater via sewer	Queensland Urban Utilities proposed ($'000)	9,152.3	9,910.9	10,733.2
		SKM revised ($'000)	9,174.7	10,190.6	11,324.6
	Trade waste	Queensland Urban Utilities proposed ($'000)	1,530.5	1,652.7	1,784.7
		SKM revised ($'000)	1,540.5	1,699.6	1,876.2
Chemical	Water	Queensland Urban Utilities proposed ($'000)	161.8	169.5	177.9
		SKM revised ($'000)	162.4	174.1	187.1
	Wastewater via sewer	Queensland Urban Utilities proposed ($'000)	3,642.2	3,812.4	4,000.3
		SKM revised ($'000)	3,652.5	3,909.1	4,196.3
	Trade waste	Queensland Urban Utilities proposed ($'000)	709.7	742.1	777.7
		SKM revised ($'000)	714.4	763.1	817.6
Sludge handling	Wastewater via sewer	Queensland Urban Utilities proposed ($'000)	7,581.2	7,940.9	8,338.1
		SKM revised ($'000)	7,597.8	8,151.1	8,770.5
	Trade waste	Queensland Urban Utilities proposed ($'000)	1,359.7	1,421.5	1,489.8
		SKM revised ($'000)	1,368.5	1,461.8	1,566.3

21.2. Capital expenditure

The following table summarises our recommended alternate budget costs for capital expenditure items reviewed.

Table 106 Recommended amendments to capital cost budgets

	Costs ($000s)			
Project	**2011-12**	**2012-13**	**2013-14**	**Total**
Brisbane Water Reticulation System Renewals Program	7,811	12,000	16,000	35,811
Fleet Replacement	7,942	3,670	4,071	15,683

22. Conclusions

We have reviewed the prudency and efficiency of a sample of Queensland Urban Utilities operating and capital expenditure costs for 2011/12 to 2013/14 based on the information provided by Queensland Urban Utilities. In addition we have reviewed the policies and procedures adopted by Queensland Urban Utilities for operating and capital expenditure budget planning. We have also reviewed the progress made by Queensland Urban Utilities in implementing the initiatives identified by the Authority from their 2010/11 interim price monitoring report. The following section presents our conclusions from this review.

22.1. Information adequacy

Queensland Urban Utilities has supplied comprehensive supporting information to enable us to complete an assessment of the prudency and efficiency for a sample of operating costs and capital expenditure of selected projects. Supply of adequate information has, in the past, been impacted by the availability of information from its participating councils. As time progresses and as Queensland Urban Utilities establishes its own ICT services, we expect this limitation of participating council information and information systems to have less impact on Queensland Urban Utilities abilities to provide necessary information for regulatory purposes.

In future, it is recommended that further information is provided to identify the process by which projects are selected and prioritised and to identify how the quantum of work was identified.

22.2. Process and procedure

22.2.1. Issues identified in the Authority's 2010/11 report

Queensland Urban Utilities has made progress in addressing the issues identified in the Authority's final report on SEQ price monitoring for 2010/11. Queensland Urban Utilities has demonstrated to us that they are adopting a region wide (whole of entity) perspective to capital expenditure where appropriate. The policy for applying capital expenditure to the RAB is consistent with that of the Authority and consistent across all the entities. There is evidence that Queensland Urban Utilities is establishing processes to ensure a consistent approach to cost estimation for capital projects although we are unable to comment on the effectiveness of these systems given the capital project sample selection and the commencement date of these projects which in the main occurred prior to the establishment of Queensland Urban Utilities.

A standard summary document is prepared for major projects that has a defined structure and which will both assist with prudent decision making and regulatory reporting. All but one of the major projects reviewed had such a document. Documented strategies for major project implementation are being prepared incorporating risk reviews and risk mitigation measures.

Similarly, Queensland Urban Utilities has a well document gateway review process for major projects.

Finally, the indexation factor applied by Queensland Urban Utilities is consistent with that applied by the Authority for other recent investigations and that used by Allconnex Water.

22.2.2. Budget formation

From our examination of the 2011/12 budgeting process it is apparent that the two budgeting methodologies applied to volume related operating cost items is largely dependent on the geography being considered. In the former Brisbane Water geography, quantities for commodity based expenditure, such as electricity, chemicals and sludge handling, are all estimated from models that have been developed in-house. In the western geographies (Ipswich, Lockyer Valley, Scenic Rim and Somerset) these same cost centres are based on historical costs, with relevant cost escalation and growth indices applied.

We consider this a core activity for the integration of the business and would expect that in future years Queensland Urban Utilities will either confirm the efficiency of the base year to which indices are applied, or will apply the zero based budget tools used in Brisbane to the other geographies.

The budgeting process for capital expenditure budgeting purposes is in keeping with good industry practice.

22.2.3. Standards of service review

Queensland Urban Utilities has developed a single consolidated set of customer service standards applicable to all customers within the service area. We believe that they are well advanced in the development of their NetServ Plan which will be completed within the proposed timeframe.

A high-level comparison of the customer standards currently used by each of the entities indicates that the service standards used by Queensland Urban Utilities are comparable to those used by the other entities, with the exceptions of non-urgent response times.

22.2.4. Asset management and condition assessment

From our review of Queensland Urban Utilities asset management and condition assessment processes we consider that Queensland Urban Utilities practices are appropriate for a water and wastewater distribution and retail utility of Queensland Urban Utilities standing and are in keeping with good industry practice. The adoption of a risk based and service standard requirement assessment to determine whether a run to failure, periodic maintenance or condition based

approach to maintenance of a particular asset should be adopted will lead to optimised operation and maintenance costs across the asset base.

22.2.5. Procurement

Queensland Urban Utilities has produced a comprehensive Procurement Manual which sets out its procurement policy and procedures covering all aspects of its purchasing process. The manual only briefly deals with contract and supplier performance management such as project delivery and close out however, it references guides on Contract Management and Major Projects Contract Management which are stated as being under development.

In this and in a number of other respects, such as Board approval for stated delegated authorities, the Procurement Manual and documentation of contract management processes may be considered as ‘work in progress’. Although we consider that the outlined policies and procedures represent good industry practice we believe that there could be greater linkage demonstrated in the Procurement Manual between procurement policies and procedures and other corporate policies and procedures such as quality approval and control procedures, environmental policies, asset management systems.

22.2.6. Cost allocation

Our review of the information provided indicates that there are occasional varied and inaccurate determination of the drivers and consequently the cost allocation.

Projects responding to instances of sewage overflow appear to be assigned the compliance driver, without considering the cause as opposed to the effect. In addition the level of sophistication in assessing cost allocation percentages should be increased. While a project may involve both relining a sewer and the installation of an adjacent sewer to respond to growth; the cost allocation should be updated when accurate cost estimation is available. The continued use of a 50:50 allocation, which is potentially reasonable at the initiation stage, after more detailed cost estimation and/or receipt of a tender, is not considered appropriate.

22.2.7. Asset Lives

Whilst the assumed asset lives for passive assets such as reservoirs and pipelines is relatively consistent between all entities and in keeping with good industry practice, there are a number of material differences between the asset lives for the active assets (eg pump stations and treatment plants). This is because these assets comprise of a range of civil, mechanical and electrical assets, all with significantly different asset lives. The calculation of a combined asset life depends on the relative weighting of the civil, mechanical and electrical assets.

22.3. Operating expenditure

Table 107 presents an overview of the prudency and efficiency reviews of Queensland Urban Utilities operating expenditure together with revised operating costs for 2011/12 which take into account changes arising from both our assessment of prudency and efficiency and from our recommended changes in water and wastewater volume growth projections.

- **Table 107 Summary of prudency and efficiency of operating costs ($000s)**

Category	Cost 2011/12	Prudent	Efficient	Revised cost 2011/12
Corporate costs	-	Prudent	Efficient[1]	-
Employee expenses	92,157.2	Prudent	Efficient[1]	92,157.2
Electricity costs	11,746.3	Prudent	Efficient	11,740.5
Chemical costs	4,513.7	Prudent	Efficient	4,529.2
Sludge handling	8,940.9	Prudent	Efficient	8,966.3

1 Assessment of efficiency accounts for the maturity of the business and constraints placed on the business (eg Workforce Framework Agreement).

We have assessed all operating expenditure within our sample to be prudent.

22.4. Capital expenditure

A representative sample of nine projects have identified and assessed. We have assessed these projects against the Authority's definitions of prudency and efficiency, including the standards of work, scope of work and the costs.

The capital expenditure for the capital project sample selected for the 2011/12 financial year is prudent and efficient.

Table 108 presents an overview of prudency and efficiency reviews of Queensland Urban Utilities' capital expenditure.

- **Table 108 Summary of prudency and efficiency of capital expenditure projects ($000s)**

Project	Cost 2011/12	Prudent	Efficient
Sewer Trunk System Renewals Program	14,219	Prudent	Efficient
ICT Strategy	9,000	Prudent	Efficient
Brisbane Water Reticulation System Renewals Program	7,811	Prudent	Efficient
Brisbane Wastewater Treatment Flood Recovery	6,674	Prudent	Efficient
Fleet Replacement Program	6,000	Prudent	Efficient
Auchenflower Branch Sewer Upgrade	5,510	Prudent	Efficient
Canungra Water Reclamation Plant Upgrade	3,345	Prudent	Efficient
Toowong Sewers Upgrade	4,982	Prudent	Efficient
Mellor Place Trunk Sewer Upgrade	700	Prudent	Efficient

Appendix A Terms of Reference

Assessment of Operating Expenditure

Component 1 - Sample Selection

The consultant must propose a sample of operating expenditure for each entity, for approval by the Authority prior to detailed review.

The sample should include the top 10 percent of operation costs by value in each activity and geographic area, over the forecast period and for 2011/12. The sample should also include at least 50percent of the total retail/distribution operating expenditure over the forecast period and for 2011/12. The sample should include a selection of unit or base rates and cost indexes.

Component 2 – Reasonableness of Operating Costs from 1 July 2011

The consultant must assess whether each of the entities' operating costs from 1 July 2010 are reasonable. In doing so, the consultant must:

a) assess whether the entities' policies and procedures for operational expenditure represent good industry practice;

b) assess the scale and cause of variances between forecasts provided in the entity's 2010/11 and 2011/12 returns;

c) assess the operating costs in aggregate, and for the sample of major operating expenditures that comprise a significant portion of retail and distribution operating costs identified in component 1 above. In doing so the consultant must have regard to:

   i. the drivers of operating expenditure including whether the expenditure is driven by legal obligations, new growth (see (e) below), operations and maintenance of existing infrastructure, or it achieves an increase in the standard of service that is explicitly endorsed by customers, external agencies or participating councils;

   ii. the conditions prevailing in relevant markets, historical trends in operating expenditure, the potential for efficiency gains or economics of scale, and relevant interstate and international benchmarks. For example, the source of unit rates and indexes must be given and the consultant must identify the reason for any costs higher than normal commercial levels;

d) accept the operational constraints imposed by the SEQ Urban Water Arrangements Reform Workforce Framework 2010, and identify the related costs in doing so compared to more competitive arrangements;

e) liaise with the Authority's consultants appointed for the review of demand and capital expenditure to ensure that consistent advice is provided to the Authority. In particular, the consultant must:

i. assess the effect of any revised demand forecasts, and assess the expenditure projections for consistency with these demand forecasts;
ii. assess the effect of any revised capital expenditure forecasts arising from the Authority's review of capital expenditure;

f) identify the value of an expenditure considered not to be reasonable;

g) provide a revised set of information templates to the Authority that contain only reasonable operating costs with all adjustments to the entities' submissions clearly indicated (focussing on Schedule 5.11.1 (operating costs)).

Component 3 – Cost Allocation

The consultant will also:

a) assess the methods adopted by the entities to allocate operating costs between services, against relevant benchmarks. This will involve as assessment of cost drivers, the approaches adopted by each entity, and approaches approved by economic regulators in other jurisdictions; and

b) report on the entities' progress in achieving the systems and information needed for informed pricing and reporting; and whether the information systems being put in place by the entities allow for a highly disaggregated and appropriately allocated system of cost recording.

Assessment of Capital Expenditure

Component 1 - Sample Selection

The consultant must propose a sample of capital expenditure for each entity, for approval by the Authority prior to detailed review.

The sample should include the top 10 percent of capital expenditure by value in each activity and geographic area, over the forecast period and for 2011/12. The sample should also include at least 50 percent of the total capital expenditure over the forecast period and for 2011/12 – if not, an additional random sample of assets comprising 30 percent (by number) of remaining assets is required. The sample should include a selection of unit or base rates and cost indexes.

For the purposes of quotation the consultant should assume a sample of 10 projects per entity (30 in total). The actual sample may differ, depending on each entity's submission (see worksheet 5.6.2). To this end, the consultant is required to provide an indicative unit rate per additional project.

Component 2 – Prudency and Efficiency of Capital Expenditure for 1 July 2011

The consultant must assess whether each of the entities' capital expenditure from 1 July 2010 is prudent (there is a demonstrated need for the expenditure) and efficient (it is cost-effective in its scope and standard, using market benchmarks).

In doing so, the consultant must follow the process and criteria set out in section 4.7 of the Final Report on SEQ Interim Price Monitoring Framework, and:

a) assess whether the entities' policies and procedures for capital expenditure represent good industry practice. In particular, the policies and procedures must reflect strategic development plans, integrate risk and asset management planning, corporate directives, be consistent with external drivers, and incorporate robust procurement practices;

b) assess entities' progress in addressing the issues identified in the Authority's 2010/11 report for future reviews (as set out in para 2 in Background above);

c) assess whether the representative sample of capital expenditure projects (identified in component 1 above) is prudent and efficient.

Expenditure is:

i. prudent if it is required as a result of a legal obligation, new growth (see (e) below), renewal of existing infrastructure, or it achieves an increase in the reliability or the quality of supply that is explicitly endorsed or desired by customers, external agencies or participating councils;

ii. efficient (cost-effective), if:

- the scope of the works (which reflects the general characteristics of the capital item) is the beat means of achieving the desired outcomes after having regard to the options available, including more cost-effective regional solutions having regards to a regional (whole of entity) perspective, the substitution possibilities between capital and operation expenditure and non-network alternative such as demand management;
- the standards of works conforms with technical, design and construction requirement in legislation, industry and other standards, codes and manuals. Compatibility with existing and adjacent infrastructure is relevant as is Compliance with Strategic Asset Management Plans and Total Management Plans are likely to be highly relevant; and
- the cost of the defined scope and standards or works is consistent with conditions prevailing in the markets for engineering, equipment supply and construction. The consultant must substantiate its view with reference to relevant interstate and international benchmarks and information sources. For example, the source of comparable unit costs and indexes must be given and the efficiency of costs justified. The consultant should identify the reasons for any costs higher than normal commercial levels;

d) assess the deliverability and timing of capital expenditure program, and chart the capital expenditure historically delivered by participating councils from 1 July 2008 to 30 June 2010;

the entities' forecasts made in 2010/11 of the period 1 July 2010 to 30 June 2013; and entities'' current forecasts to 30 June 2014. Assess the scale and cause of variances between forecasts provided in the entities' 2010/11 and 201/12 returns;

e) liaise with the Authority's consultants appointed for the review of demand and operating expenditure to ensure that consistent advice is provided to the Authority. In particular, the consultant must:

   i. assess the effect of any revised demand forecasts, and assess the expenditure projections and cost drivers for consistency with these demand forecasts;
   ii. assess the effect of any revised operating expenditure forecasts arising from the Authority's operational expenditure consultant;

f) take into account any previous reviews of relevant assets provided by the entities, such as Priority Infrastructure Plans;

g) identify whether the capital expenditure forecasts encompass any efficiency gains or economies of scale, and identify a prudent and efficient level of these gains with reference to appropriate benchmarks;

h) identify the value of any expenditure considered not to be prudent or efficient;

i) assess the regulatory asset lives for capital expenditure in 5.8.1.1, and the tax asset lives for capital expenditure in 5.8.1.2, against relevant benchmarks;

j) provide a revised set of information templates to the Authority that contain only the prudent and efficient capital expenditure and useful asset lives, with all adjustments to the entities' submission clearly indicated in the relevant worksheets and also separately logged (focusing on Schedules 5.6.1 & 5.6.2 (Capital Expenditure) and 5.8.1.1 (Asset Lives (RAB)).

Component 3 – Cost Allocation

The consultant will also:

a) assess the methods adopted by the entities to allocate existing and future capital costs between services, against relevant benchmarks. This will involve as assessment of cost drivers, the approaches adopted by each entity, and approaches approved by economic regulators in other jurisdictions; and

b) report on the entities' progress in achieving the systems and information needed for informed pricing and reporting; and whether the information systems being put in place by the entities allow for a highly disaggregated system of cost recording.